

THE NAUTICAL ALMANAC

FOR THE YEAR

1961

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A2 ALTITUDE CORRECTION TABLES 10°-90°—SUN, STARS, PLANETS

OCT.-MAR. SUN			APR.-SEPT.		
App. Alt.	Lower Limb	Upper Limb	App. Alt.	Lower Limb	Upper Limb
9 34	+10.8	-22.7	9 39	+10.6	-22.4
9 45	+10.9	-22.6	9 51	+10.7	-22.3
9 56	+11.0	-22.5	10 03	+10.8	-22.2
10 08	+11.1	-22.4	10 15	+10.9	-22.1
10 21	+11.2	-22.3	10 27	+11.0	-22.0
10 34	+11.3	-22.2	10 40	+11.1	-21.9
10 47	+11.4	-22.1	10 54	+11.2	-21.8
11 01	+11.5	-22.0	11 08	+11.3	-21.7
11 15	+11.6	-21.9	11 23	+11.4	-21.6
11 30	+11.7	-21.8	11 38	+11.5	-21.5
11 46	+11.8	-21.7	11 54	+11.6	-21.4
12 02	+11.9	-21.6	12 10	+11.7	-21.3
12 19	+12.0	-21.5	12 28	+11.8	-21.2
12 37	+12.1	-21.4	12 46	+11.9	-21.1
12 55	+12.2	-21.3	13 05	+12.0	-21.0
13 14	+12.3	-21.2	13 24	+12.1	-20.9
13 35	+12.4	-21.1	13 45	+12.2	-20.8
13 56	+12.5	-21.0	14 07	+12.3	-20.7
14 18	+12.6	-20.9	14 30	+12.4	-20.6
14 42	+12.7	-20.8	14 54	+12.5	-20.5
15 06	+12.8	-20.7	15 19	+12.6	-20.4
15 32	+12.9	-20.6	15 46	+12.7	-20.3
15 59	+13.0	-20.5	16 14	+12.8	-20.2
16 28	+13.1	-20.4	16 44	+12.9	-20.1
16 59	+13.2	-20.3	17 15	+13.0	-20.0
17 32	+13.3	-20.2	17 48	+13.1	-19.9
18 06	+13.4	-20.1	18 24	+13.2	-19.8
18 42	+13.5	-20.0	19 01	+13.3	-19.7
19 21	+13.6	-19.9	19 42	+13.4	-19.6
20 03	+13.7	-19.8	20 25	+13.5	-19.5
20 48	+13.8	-19.7	21 11	+13.6	-19.4
21 35	+13.9	-19.6	22 00	+13.7	-19.3
22 26	+14.0	-19.5	22 54	+13.8	-19.2
23 22	+14.1	-19.4	23 51	+13.9	-19.1
24 21	+14.2	-19.3	24 53	+14.0	-19.0
25 26	+14.3	-19.2	26 00	+14.1	-18.9
26 36	+14.4	-19.1	27 13	+14.2	-18.8
27 52	+14.5	-19.0	28 33	+14.3	-18.7
29 15	+14.6	-18.9	30 00	+14.4	-18.6
30 46	+14.7	-18.8	31 35	+14.5	-18.5
32 26	+14.8	-18.7	33 20	+14.6	-18.4
34 17	+14.9	-18.6	35 17	+14.7	-18.3
36 20	+15.0	-18.5	37 26	+14.8	-18.2
38 36	+15.1	-18.4	39 50	+14.9	-18.1
41 08	+15.2	-18.3	42 31	+15.0	-18.0
43 59	+15.3	-18.2	45 31	+15.1	-17.9
47 10	+15.4	-18.1	48 55	+15.2	-17.8
50 46	+15.5	-18.0	52 44	+15.3	-17.7
54 49	+15.6	-17.9	57 02	+15.4	-17.6
59 23	+15.7	-17.8	61 51	+15.5	-17.5
64 30	+15.8	-17.7	67 17	+15.6	-17.4
70 12	+15.9	-17.6	73 16	+15.7	-17.3
76 26	+16.0	-17.5	79 43	+15.8	-17.2
83 05	+16.1	-17.4	86 32	+15.9	-17.1
90 00			90 00		

STARS AND PLANETS			
App. Alt.	Corr ⁿ	App. Alt.	Additional Corr ⁿ
9 56	-5.3	1961	
10 08	-5.2	VENUS	
10 20	-5.1	Jan. 1-Feb. 3	
10 33	-5.0	0°	+0.2
10 46	-4.9	47	
11 00	-4.8	Feb. 4-Mar. 3	
11 14	-4.7	0°	+0.3
11 29	-4.6	46	
11 45	-4.5	Mar. 4-Mar. 19	
12 01	-4.4	0°	+0.4
12 18	-4.3	11	+0.5
12 35	-4.2	41	
12 54	-4.1	Mar. 20-Mar. 28	
13 13	-4.0	0°	+0.5
13 33	-3.9	6	+0.6
13 54	-3.8	20	+0.7
14 16	-3.7	31	
14 40	-3.6	Mar. 29-Apr. 24	
15 04	-3.5	0°	+0.6
15 30	-3.4	4	+0.7
15 57	-3.3	12	+0.8
16 26	-3.2	22	
16 56	-3.1	Apr. 25-May 2	
17 28	-3.0	0°	+0.5
18 02	-2.9	6	+0.6
18 38	-2.8	20	+0.7
19 17	-2.7	31	
19 58	-2.6	May 3-May 18	
20 42	-2.5	0°	+0.4
21 28	-2.4	11	+0.5
22 19	-2.3	41	
23 13	-2.2	May 19-June 13	
24 11	-2.1	0°	+0.3
25 14	-2.0	46	
26 22	-1.9	June 14-July 27	
27 36	-1.8	0°	+0.2
28 56	-1.7	47	
30 24	-1.6	July 28-Dec. 31	
32 00	-1.5	0°	+0.1
33 45	-1.4	42	
35 40	-1.3	MARS	
37 48	-1.2	Jan. 1-Mar. 2	
40 08	-1.1	0°	+0.2
42 44	-1.0	41	+0.1
45 36	-0.9	75	
48 47	-0.8	Mar. 3-Dec. 31	
52 18	-0.7	0°	+0.1
56 11	-0.6	60	
60 28	-0.5		
65 08	-0.4		
70 11	-0.3		
75 34	-0.2		
81 13	-0.1		
87 03	0.0		
90 00			

DIP			
Ht. of Eye	Corr ⁿ	Ht. of Eye	Corr ⁿ
ft.	ft.	ft.	ft.
1.1	-1.1	44	-6.5
1.4	-1.2	45	-6.6
1.6	-1.3	47	-6.7
1.9	-1.4	48	-6.8
2.2	-1.5	49	-6.9
2.5	-1.6	51	-7.0
2.8	-1.7	52	-7.1
3.2	-1.8	54	-7.2
3.6	-1.9	55	-7.3
4.0	-2.0	57	-7.4
4.4	-2.1	58	-7.5
4.9	-2.2	60	-7.6
5.3	-2.3	62	-7.7
5.8	-2.4	63	-7.8
6.3	-2.5	65	-7.9
6.9	-2.6	67	-8.0
7.4	-2.7	68	-8.1
8.0	-2.8	70	-8.2
8.6	-2.9	72	-8.3
9.2	-3.0	74	-8.4
9.8	-3.1	75	-8.5
10.5	-3.2	77	-8.6
11.2	-3.3	79	-8.7
11.9	-3.4	81	-8.8
12.6	-3.5	83	-8.9
13.3	-3.6	85	-9.0
14.1	-3.7	87	-9.1
14.9	-3.8	88	-9.2
15.7	-3.9	90	-9.3
16.5	-4.0	92	-9.4
17.4	-4.1	94	-9.5
18.3	-4.2	96	-9.6
19.1	-4.3	98	-9.7
20.1	-4.4	101	-9.8
21.0	-4.5	103	-9.9
22.0	-4.6	105	-10.0
22.9	-4.7	107	-10.1
23.9	-4.8	109	-10.2
24.9	-4.9	111	-10.3
26.0	-5.0	113	-10.4
27.1	-5.1	116	-10.5
28.1	-5.2	118	-10.6
29.2	-5.3	120	-10.7
30.4	-5.4	122	-10.8
31.5	-5.5	125	-10.9
32.7	-5.6	127	-11.0
33.9	-5.7	129	-11.1
35.1	-5.8	132	-11.2
36.3	-5.9	134	-11.3
37.6	-6.0	136	-11.4
38.9	-6.1	139	-11.5
40.1	-6.2	141	-11.6
41.5	-6.3	144	-11.7
42.8	-6.4	146	-11.8
44.2		149	

App. Alt. = Apparent altitude = Sextant altitude corrected for index error and dip.

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ALTITUDE CORRECTION TABLES 0°-10°—SUN, STARS, PLANETS A₃

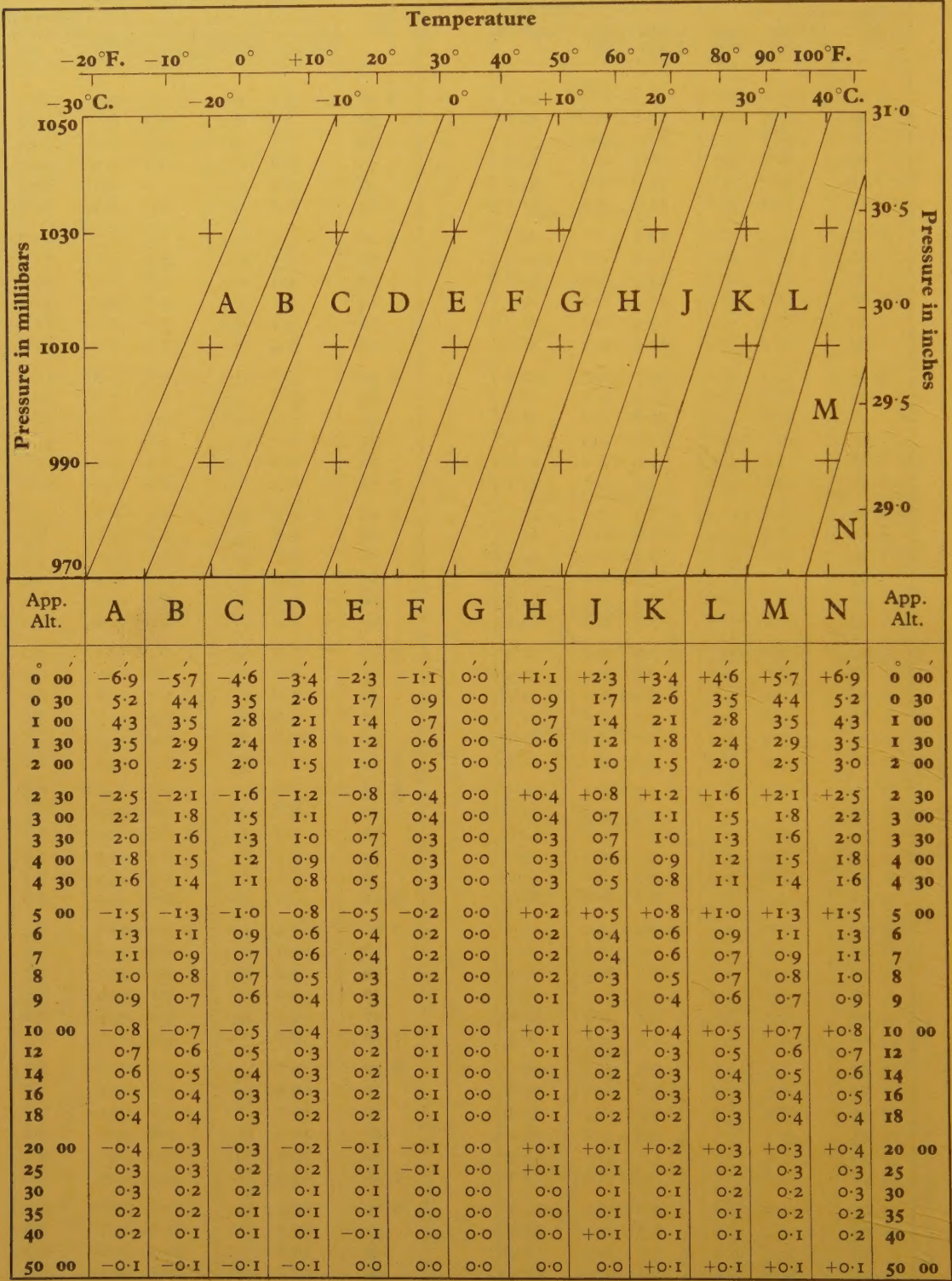
App. Alt.	OCT.-MAR. SUN APR.-SEPT.				STARS PLANETS
	Lower Limb	Upper Limb	Lower Limb	Upper Limb	
0 00	-18.2	-51.7	-18.4	-51.4	-34.5
03	17.5	51.0	17.8	50.8	33.8
06	16.9	50.4	17.1	50.1	33.2
09	16.3	49.8	16.5	49.5	32.6
12	15.7	49.2	15.9	48.9	32.0
15	15.1	48.6	15.3	48.3	31.4
0 18	-14.5	-48.0	-14.8	-47.8	-30.8
21	14.0	47.5	14.2	47.2	30.3
24	13.5	47.0	13.7	46.7	29.8
27	12.9	46.4	13.2	46.2	29.2
30	12.4	45.9	12.7	45.7	28.7
33	11.9	45.4	12.2	45.2	28.2
0 36	-11.5	-45.0	-11.7	-44.7	-27.8
39	11.0	44.5	11.2	44.2	27.3
42	10.5	44.0	10.8	43.8	26.8
45	10.1	43.6	10.3	43.3	26.4
48	9.6	43.1	9.9	42.9	25.9
51	9.2	42.7	9.5	42.5	25.5
0 54	- 8.8	-42.3	- 9.1	-42.1	-25.1
0 57	8.4	41.9	8.7	41.7	24.7
1 00	8.0	41.5	8.3	41.3	24.3
03	7.7	41.2	7.9	40.9	24.0
06	7.3	40.8	7.5	40.5	23.6
09	6.9	40.4	7.2	40.2	23.2
1 12	- 6.6	-40.1	- 6.8	-39.8	-22.9
15	6.2	39.7	6.5	39.5	22.5
18	5.9	39.4	6.2	39.2	22.2
21	5.6	39.1	5.8	38.8	21.9
24	5.3	38.8	5.5	38.5	21.6
27	4.9	38.4	5.2	38.2	21.2
1 30	- 4.6	-38.1	- 4.9	-37.9	-20.9
35	4.2	37.7	4.4	37.4	20.5
40	3.7	37.2	4.0	37.0	20.0
45	3.2	36.7	3.5	36.5	19.5
50	2.8	36.3	3.1	36.1	19.1
1 55	2.4	35.9	2.6	35.6	18.7
2 00	- 2.0	-35.5	- 2.2	-35.2	-18.3
05	1.6	35.1	1.8	34.8	17.9
10	1.2	34.7	1.5	34.5	17.5
15	0.9	34.4	1.1	34.1	17.2
20	0.5	34.0	0.8	33.8	16.8
25	- 0.2	33.7	0.4	33.4	16.5
2 30	+ 0.2	-33.3	- 0.1	-33.1	-16.1
35	0.5	33.0	+ 0.2	32.8	15.8
40	0.8	32.7	0.5	32.5	15.5
45	1.1	32.4	0.8	32.2	15.2
50	1.4	32.1	1.1	31.9	14.9
2 55	1.6	31.9	1.4	31.6	14.7
3 00	+ 1.9	-31.6	+ 1.7	-31.3	-14.4
05	2.2	31.3	1.9	31.1	14.1
10	2.4	31.1	2.1	30.9	13.9
15	2.6	30.9	2.4	30.6	13.7
20	2.9	30.6	2.6	30.4	13.4
25	3.1	30.4	2.9	30.1	13.2
3 30	+ 3.3	-30.2	+ 3.1	-29.9	-13.0

App. Alt.	OCT.-MAR. SUN APR.-SEPT.				STARS PLANETS
	Lower Limb	Upper Limb	Lower Limb	Upper Limb	
3 30	+ 3.3	-30.2	+ 3.1	-29.9	-13.0
35	3.6	29.9	3.3	29.7	12.7
40	3.8	29.7	3.5	29.5	12.5
45	4.0	29.5	3.7	29.3	12.3
50	4.2	29.3	3.9	29.1	12.1
3 55	4.4	29.1	4.1	28.9	11.9
4 00	+ 4.5	-29.0	+ 4.3	-28.7	-11.8
05	4.7	28.8	4.5	28.5	11.6
10	4.9	28.6	4.6	28.4	11.4
15	5.1	28.4	4.8	28.2	11.2
20	5.2	28.3	5.0	28.0	11.1
25	5.4	28.1	5.1	27.9	10.9
4 30	+ 5.6	-27.9	+ 5.3	-27.7	-10.7
35	5.7	27.8	5.5	27.5	10.6
40	5.9	27.6	5.6	27.4	10.4
45	6.0	27.5	5.8	27.2	10.3
50	6.2	27.3	5.9	27.1	10.1
4 55	6.3	27.2	6.0	27.0	10.0
5 00	+ 6.4	-27.1	+ 6.2	-26.8	- 9.9
05	6.6	26.9	6.3	26.7	9.7
10	6.7	26.8	6.4	26.6	9.6
15	6.8	26.7	6.6	26.4	9.5
20	6.9	26.6	6.7	26.3	9.4
25	7.1	26.4	6.8	26.2	9.2
5 30	+ 7.2	-26.3	+ 6.9	-26.1	- 9.1
35	7.3	26.2	7.0	26.0	9.0
40	7.4	26.1	7.2	25.8	8.9
45	7.5	26.0	7.3	25.7	8.8
50	7.6	25.9	7.4	25.6	8.7
5 55	7.7	25.8	7.5	25.5	8.6
6 00	+ 7.8	-25.7	+ 7.6	-25.4	- 8.5
10	8.0	25.5	7.8	25.2	8.3
20	8.2	25.3	8.0	25.0	8.1
30	8.4	25.1	8.1	24.9	7.9
40	8.6	24.9	8.3	24.7	7.7
6 50	8.7	24.8	8.5	24.5	7.6
7 00	+ 8.9	-24.6	+ 8.6	-24.4	- 7.4
10	9.1	24.4	8.8	24.2	7.2
20	9.2	24.3	9.0	24.0	7.1
30	9.3	24.2	9.1	23.9	7.0
40	9.5	24.0	9.2	23.8	6.8
7 50	9.6	23.9	9.4	23.6	6.7
8 00	+ 9.7	-23.8	+ 9.5	-23.5	- 6.6
10	9.9	23.6	9.6	23.4	6.4
20	10.0	23.5	9.7	23.3	6.3
30	10.1	23.4	9.8	23.2	6.2
40	10.2	23.3	10.0	23.0	6.1
8 50	10.3	23.2	10.1	22.9	6.0
9 00	+ 10.4	-23.1	+ 10.2	-22.8	- 5.9
10	10.5	23.0	10.3	22.7	5.8
20	10.6	22.9	10.4	22.6	5.7
30	10.7	22.8	10.5	22.5	5.6
40	10.8	22.7	10.6	22.4	5.5
9 50	10.9	22.6	10.6	22.4	5.4
10 00	+ 11.0	-22.5	+ 10.7	-22.3	- 5.3

Additional corrections for temperature and pressure are given on the following page.
For bubble sextant observations ignore dip and use the star corrections for Sun, planets, and stars.

A4 ALTITUDE CORRECTION TABLES—ADDITIONAL CORRECTIONS

ADDITIONAL REFRACTION CORRECTIONS FOR NON-STANDARD CONDITIONS



The graph is entered with arguments temperature and pressure to find a zone letter; using as arguments this zone letter and apparent altitude (sextant altitude corrected for dip), a correction is taken from the table. This correction is to be applied to the sextant altitude in addition to the corrections for standard conditions (for the Sun, planets and stars from the inside front cover and for the Moon from the inside back cover).

2638⁶¹
1938
43
1961

PREFACE

The British and American editions of *The Nautical Almanac*, which are identical in content, are produced jointly by H. M. Nautical Almanac Office, Royal Greenwich Observatory, under the immediate supervision of D. H. Sadler and W. A. Scott, and by the Nautical Almanac Office, United States Naval Observatory, under the immediate supervision of E. W. Woolard and Armstrong Thomas, to the general requirements of the British Admiralty and of the United States Navy. The Almanac is printed separately in the United Kingdom and in the United States.

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December, 1958

RELIGIOUS CALENDARS

Epiphany	Jan. 6	Low Sunday	Apr. 9
Septuagesima Sunday	„ 29	Rogation Sunday	May 7
Quinquagesima Sunday	Feb. 12	Ascension Day—Holy Thursday	„ 11
Ash Wednesday	„ 15	Whit Sunday—Pentecost	„ 21
Quadragesima Sunday	„ 19	Trinity Sunday	„ 28
Palm Sunday	Mar. 26	Corpus Christi	June 1
Good Friday	„ 31	1st Sunday in Advent	Dec. 3
Easter Day	Apr. 2	Christmas Day (Monday)	„ 25
Passover, First day of	Apr. 1	Day of Atonement (Yom Kippur)	Sept. 20
Feast of Weeks (Shebuoth)	May 21	Tabernacles, First day of (Succoth)	„ 25
Jewish New Year (5722)	Sept. 11		
Ramadân, First day of (tabular)	Feb. 17	Mohammedan New Year (1381)	June 15

CIVIL CALENDAR—BRITISH COMMONWEALTH

Bank Holiday (Scotland)	Jan. 2	Commonwealth Day	May 24
Australia Day	„ 26	Union Day (South Africa)	„ 31
Republic Day (India)	„ 26	Birthday of Prince Philip, Duke of	
Independence Commemoration Day		Edinburgh	June 10
(Ceylon)	Feb. 4	Dominion Day (Canada)	July 1
Accession of Queen Elizabeth II	„ 6	Bank Holiday	Aug. 7
St. David (Wales)	Mar. 1	Pakistan Day	„ 14
St. Patrick (Ireland)	„ 17	Dominion Day (New Zealand)	Sept. 26
Bank Holiday	Apr. 3	Remembrance Sunday	Nov. 12
Birthday of Queen Elizabeth II	„ 21	Birthday of the Prince of Wales	„ 14
St. George (England)	„ 23	St. Andrew (Scotland)	„ 30
Bank Holiday	May 22	Bank Holiday	Dec. 26

CIVIL CALENDAR—UNITED STATES OF AMERICA

New Year's Day	Jan. 1	Labor Day	Sept. 4
Lincoln's Birthday	Feb. 12	Columbus Day	Oct. 12
Washington's Birthday	„ 22	Election Day (in certain States)	Nov. 7
Memorial Day	May 30	Veterans Day	„ 11
Independence Day	July 4	Thanksgiving Day	„ 23

Holidays falling on Sunday are normally observed the following day.

PHASES OF THE MOON

New Moon	First Quarter	Full Moon	Last Quarter
d h m	d h m	d h m	d h m
Jan. 16 21 30	Jan. 23 16 13	Jan. 1 23 05	Jan. 10 03 02
Feb. 15 08 10	Feb. 22 08 34	Jan. 31 18 47	Feb. 8 16 49
Mar. 16 18 51	Mar. 24 02 48	Mar. 2 13 34	Mar. 10 02 57
Apr. 15 05 37	Apr. 22 21 49	Apr. 1 05 47	Apr. 8 10 16
May 14 16 54	May 22 16 18	Apr. 30 18 40	May 7 15 57
June 13 05 16	June 21 09 01	May 30 04 37	June 5 21 19
July 12 19 11	July 20 23 13	June 28 12 37	July 5 03 32
Aug. 11 10 36	Aug. 19 10 51	July 27 19 50	Aug. 3 11 47
Sept. 10 02 50	Aug. 19 10 51	Aug. 26 03 13	Sept. 1 23 05
Oct. 9 18 52	Sept. 17 20 23	Sept. 24 11 33	Oct. 1 14 10
Nov. 8 09 58	Oct. 17 04 34	Oct. 23 21 30	Oct. 31 08 58
Dec. 7 23 52	Nov. 15 12 12	Nov. 22 09 44	Nov. 30 06 18
	Dec. 14 20 05	Dec. 22 00 42	Dec. 30 03 57

DAYS OF THE WEEK AND DAYS OF THE YEAR

Day of Month	JAN.		FEB.		MAR.		APR.		MAY		JUNE		JULY		AUG.		SEPT.		OCT.		NOV.		DEC.	
	Week	Year	Week	Year	Week	Year	Week	Year	Week	Year	Week	Year	Week	Year	Week	Year	Week	Year	Week	Year	Week	Year	Week	Year
1	S.	1	W.	32	W.	60	S.	91	M.	121	Th.	152	S.	182	Tu.	213	F.	244	S.	274	W.	305	F.	335
2	M.	2	Th.	33	Th.	61	S.	92	Tu.	122	F.	153	S.	183	W.	214	S.	245	M.	275	Th.	306	S.	336
3	Tu.	3	F.	34	F.	62	M.	93	W.	123	S.	154	M.	184	Th.	215	S.	246	Tu.	276	F.	307	S.	337
4	W.	4	S.	35	S.	63	Tu.	94	Th.	124	S.	155	Tu.	185	F.	216	M.	247	W.	277	S.	308	M.	338
5	Th.	5	S.	36	S.	64	W.	95	F.	125	M.	156	W.	186	S.	217	Tu.	248	Th.	278	S.	309	Tu.	339
6	F.	6	M.	37	M.	65	Th.	96	S.	126	Tu.	157	Th.	187	S.	218	W.	249	F.	279	M.	310	W.	340
7	S.	7	Tu.	38	Tu.	66	F.	97	S.	127	W.	158	F.	188	M.	219	Th.	250	S.	280	Tu.	311	Th.	341
8	S.	8	W.	39	W.	67	S.	98	M.	128	Th.	159	S.	189	Tu.	220	F.	251	S.	281	W.	312	F.	342
9	M.	9	Th.	40	Th.	68	S.	99	Tu.	129	F.	160	S.	190	W.	221	S.	252	M.	282	Th.	313	S.	343
10	Tu.	10	F.	41	F.	69	M.	100	W.	130	S.	161	M.	191	Th.	222	S.	253	Tu.	283	F.	314	S.	344
11	W.	11	S.	42	S.	70	Tu.	101	Th.	131	S.	162	Tu.	192	F.	223	M.	254	W.	284	S.	315	M.	345
12	Th.	12	S.	43	S.	71	W.	102	F.	132	M.	163	W.	193	S.	224	Tu.	255	Th.	285	S.	316	Tu.	346
13	F.	13	M.	44	M.	72	Th.	103	S.	133	Tu.	164	Th.	194	S.	225	W.	256	F.	286	M.	317	W.	347
14	S.	14	Tu.	45	Tu.	73	F.	104	S.	134	W.	165	F.	195	M.	226	Th.	257	S.	287	Tu.	318	Th.	348
15	S.	15	W.	46	W.	74	S.	105	M.	135	Th.	166	S.	196	Tu.	227	F.	258	S.	288	W.	319	F.	349
16	M.	16	Th.	47	Th.	75	S.	106	Tu.	136	F.	167	S.	197	W.	228	S.	259	M.	289	Th.	320	S.	350
17	Tu.	17	F.	48	F.	76	M.	107	W.	137	S.	168	M.	198	Th.	229	S.	260	Tu.	290	F.	321	S.	351
18	W.	18	S.	49	S.	77	Tu.	108	Th.	138	S.	169	Tu.	199	F.	230	M.	261	W.	291	S.	322	M.	352
19	Th.	19	S.	50	S.	78	W.	109	F.	139	M.	170	W.	200	S.	231	Tu.	262	Th.	292	S.	323	Tu.	353
20	F.	20	M.	51	M.	79	Th.	110	S.	140	Tu.	171	Th.	201	S.	232	W.	263	F.	293	M.	324	W.	354
21	S.	21	Tu.	52	Tu.	80	F.	111	S.	141	W.	172	F.	202	M.	233	Th.	264	S.	294	Tu.	325	Th.	355
22	S.	22	W.	53	W.	81	S.	112	M.	142	Th.	173	S.	203	Tu.	234	F.	265	S.	295	W.	326	F.	356
23	M.	23	Th.	54	Th.	82	S.	113	Tu.	143	F.	174	S.	204	W.	235	S.	266	M.	296	Th.	327	S.	357
24	Tu.	24	F.	55	F.	83	M.	114	W.	144	S.	175	M.	205	Th.	236	S.	267	Tu.	297	F.	328	S.	358
25	W.	25	S.	56	S.	84	Tu.	115	Th.	145	S.	176	Tu.	206	F.	237	M.	268	W.	298	S.	329	M.	359
26	Th.	26	S.	57	S.	85	W.	116	F.	146	M.	177	W.	207	S.	238	Tu.	269	Th.	299	S.	330	Tu.	360
27	F.	27	M.	58	M.	86	Th.	117	S.	147	Tu.	178	Th.	208	S.	239	W.	270	F.	300	M.	331	W.	361
28	S.	28	Tu.	59	Tu.	87	F.	118	S.	148	W.	179	F.	209	M.	240	Th.	271	S.	301	Tu.	332	Th.	362
29	S.	29			W.	88	S.	119	M.	149	Th.	180	S.	210	Tu.	241	F.	272	S.	302	W.	333	F.	363
30	M.	30			Th.	89	S.	120	Tu.	150	F.	181	S.	211	W.	242	S.	273	M.	303	Th.	334	S.	364
31	Tu.	31			F.	90			W.	151			M.	212	Th.	243			Tu.	304			S.	365

ECLIPSES

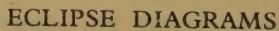
There will be four eclipses, two of the Sun and two of the Moon.

I. *A Total Eclipse of the Sun*, February 15. See map on page 6. The maximum duration of the total phase is 2^m 45^s.

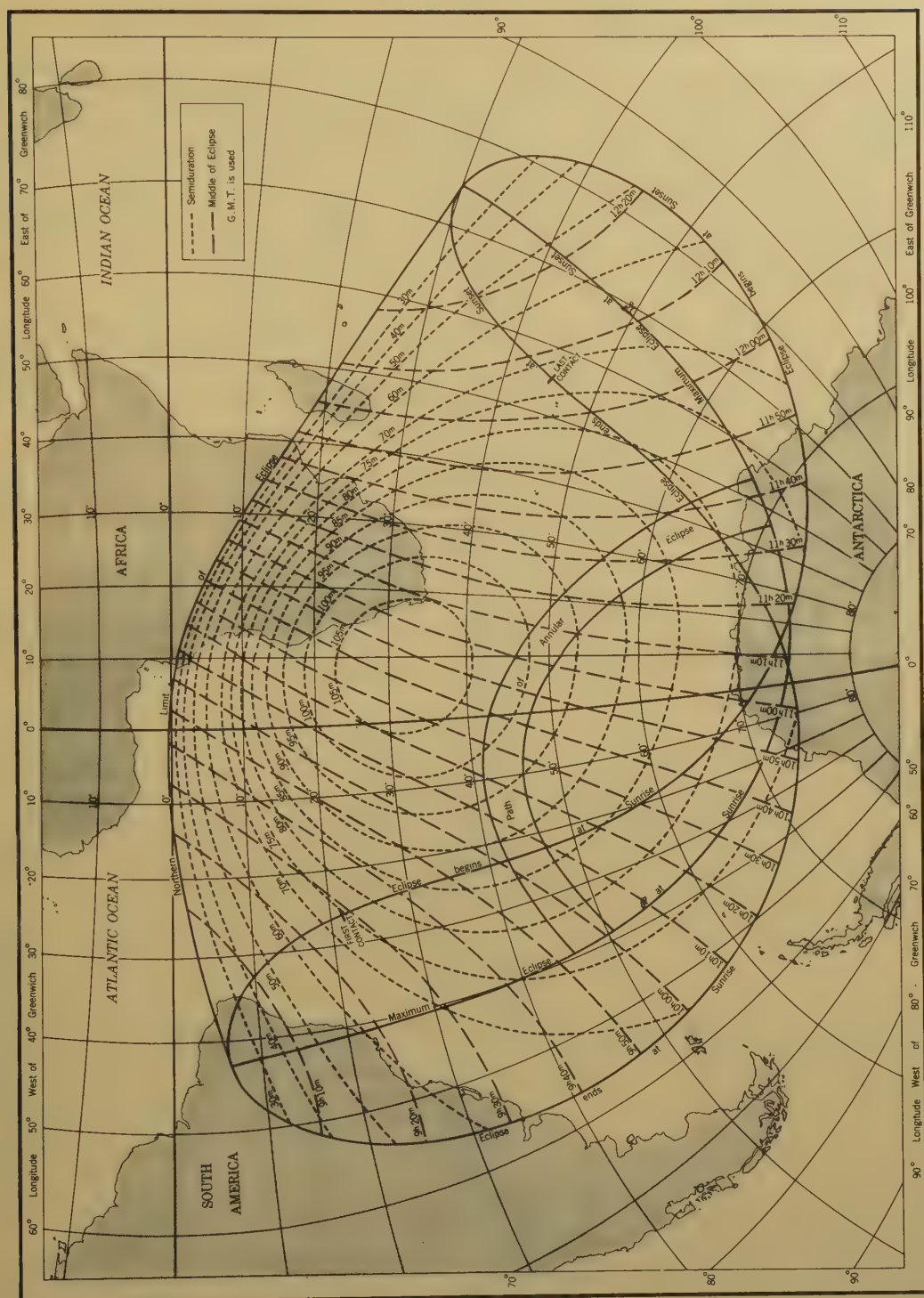
II. *A Partial Eclipse of the Moon*, March 2. The eclipse begins at 11^h 51^m and ends at 15^h 05^m. The area of visibility includes eastern Europe, the extreme north-eastern part of Africa, the Indian Ocean, Asia, Australia, New Zealand, parts of Antarctica, the Pacific Ocean, North America except the extreme eastern part, and the north polar regions. The time of maximum eclipse is 13^h 28^m, when 0.81 of the Moon's diameter is obscured.

III. *An Annular Eclipse of the Sun*, August 11. See map on page 7. The maximum duration of the annular phase is 6^m 35^s.

IV. *A Partial Eclipse of the Moon*, August 26. The eclipse begins at 01^h 35^m and ends at 04^h 42^m. The area of visibility includes the eastern part of the Pacific Ocean, most of Antarctica, South America, North America except the north-western tip of Alaska, the Atlantic Ocean, Europe, Africa and Asia Minor. The time of maximum eclipse is 03^h 08^m, when 0.99 of the Moon's diameter is obscured.



The principal features shown on the above diagrams are ; the paths of total and annular eclipses ; the northern and southern limits of partial eclipse ; the sunrise and sunset curves, from which the eclipsed Sun is seen on the horizon ; and contour lines showing the time of middle of eclipse and the semi-duration of partial eclipse. The times of beginning and end of partial eclipse at any place can be found by applying the semi-duration to the time of middle of the eclipse, both being interpolated



ECLIPSE DIAGRAMS

for that place from the contour lines. For total and annular eclipses the mid-times of the total and annular phases are generally within 5 minutes of those given for the middle of eclipse ; but semi-durations, which never exceed four minutes and which depend on the precise position relative to the path, are not given. Further details of the paths and times of central eclipse are given in the *Astronomical Ephemeris* and in the *American Ephemeris*.

POSITIONS OF PLANETS

VENUS is easily identified by its superior brilliance. From January to the end of March it is visible in the west after sunset; for the first half of April it is too close to the Sun for observation, and for the remainder of the year it is visible in the east before sunrise, except during December, when it becomes too close to the Sun for observation. Venus is in conjunction with Mercury on April 18.

MARS is an evening star from January to the end of October; in November and December it is too close to the Sun for observation. In January and March it is about 20° N.N.E. of *Betelgeuse*, in May about 15° S.E. of *Pollux*; it passes just north of *Regulus* on June 27; from July to September it is between *Regulus* and *Spica*, passing north of *Spica* on September 20. Mars is in conjunction with Mercury on September 22 and October 11, and between these dates Mercury is farther from the Sun and is brighter than Mars. The reddish tint of Mars should assist in its identification.

JUPITER is too close to the Sun for observation until the end of January, when it is a morning star, low in the east before sunrise; it comes to opposition at the end of July, when it is suitable for observation all night; for the remainder of the year it is an evening star. Jupiter is situated between 30° S.S.W. and 30° S.S.E. of *Altair* throughout the year. Jupiter and Saturn are in conjunction on February 18.

SATURN is close to Jupiter throughout the year, being about 5° east of Jupiter in January and about 10° west of Jupiter at the end of the year. Saturn is fainter than Jupiter.

MERCURY can only be seen low in the east just before sunrise, or low in the west just after sunset. It is visible before sunrise between the following approximate dates; the figures in brackets are the magnitudes: February 28 (+1.8) to April 24 (-1.1), July 5 (+2.2) to August 6 (-1.3), and October 28 (+1.5) to November 30 (-0.7); the planet is brighter towards the end of each period. It is visible after sunset between the following approximate dates: January 20 (-0.9) to February 16 (+1.4), May 10 (-1.4) to June 19 (+2.3), and August 24 (-0.9) to October 17 (+1.6); the planet is brighter at the beginning of each period.

PLANET DIAGRAM

General Description. The diagram on the opposite page shows, in graphical form for any date during the year, the local mean time of meridian passage of the Sun, of the five planets Mercury, Venus, Mars, Jupiter, and Saturn, and of each 30° of S.H.A.; intermediate lines, corresponding to particular stars, may be drawn in by the user if he so desires. It is intended to provide a general picture of the availability of planets and stars for observation.

On each side of the line marking the time of meridian passage of the Sun a band, 45^m wide, is shaded to indicate that planets and most stars crossing the meridian within 45^m of the Sun are too close to the Sun for observation.

Method of use and interpretation. For any date the diagram provides immediately the times of meridian passage of the Sun, planets and stars, and thus the following information:

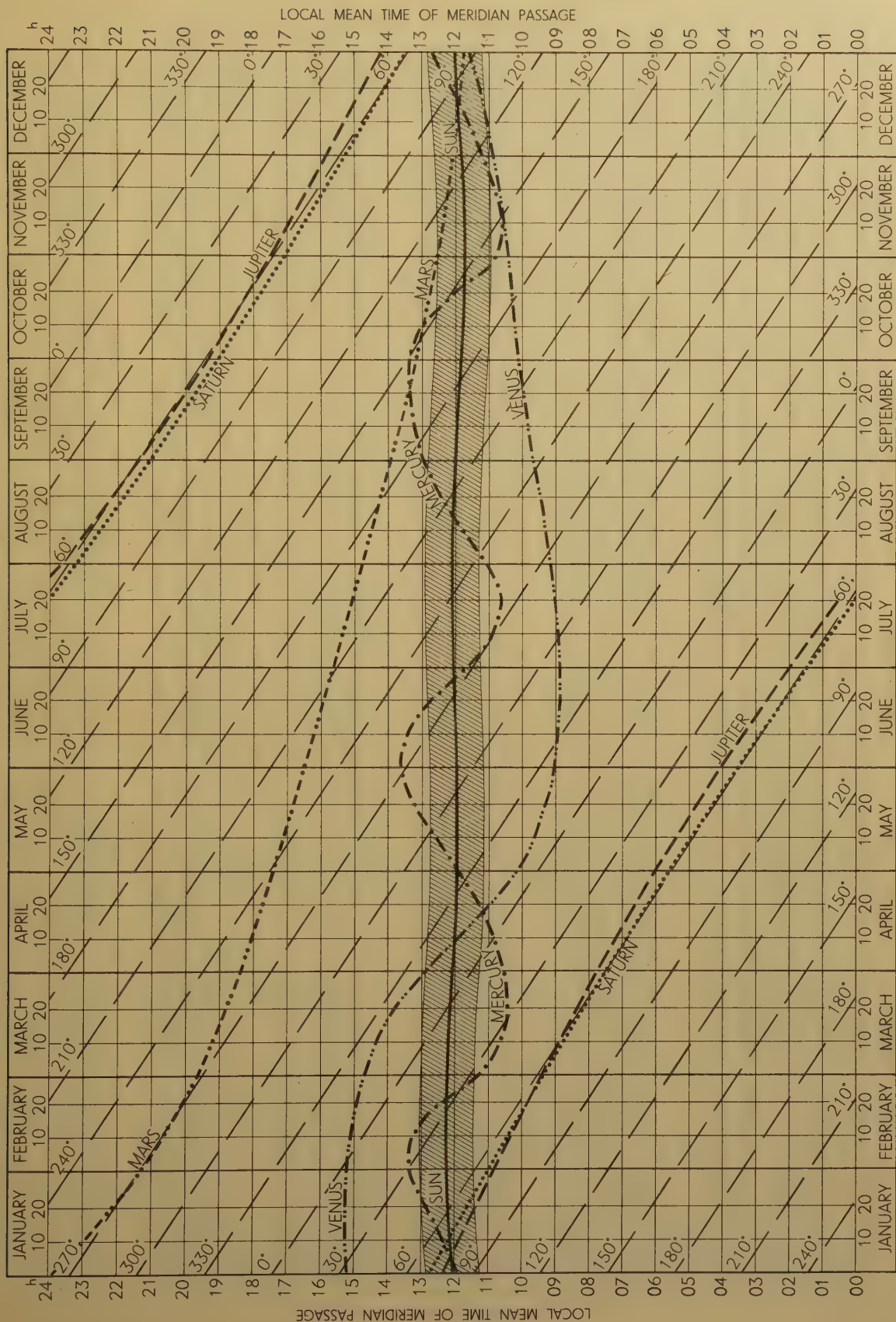
- whether a planet or star is too close to the Sun for observation;
- whether a planet is a morning or evening star;
- some indication of its position during twilight;
- the proximity of other planets.

When the meridian passage occurs at midnight the body is in opposition to the Sun and is visible all night; planets may be observable in both morning and evening twilights. As the time of meridian passage decreases, the body ceases to be observable in the morning, but its altitude above the eastern horizon during evening twilight gradually increases; this continues until the body is on the meridian at twilight. From then onwards the body is observable above the western horizon and its altitude at evening twilight gradually decreases; eventually the body becomes too close to the Sun for observation. When the body again becomes visible it is seen as a morning star low in the east; its altitude at twilight increases until meridian passage occurs at the time of morning twilight. Then, as the time of meridian passage decreases to 0^h , the body is observable in the west in the morning twilight with a gradually decreasing altitude, until it once again reaches opposition.

DO NOT CONFUSE

Mercury and Venus for a few days before April 18, when Mercury is farther from the Sun, but fainter than Venus.

Mercury and Mars from September 22 to October 11, when Mercury is farther from the Sun, and is brighter than Mars.



	ARIES	VENUS -3.8		MARS -1.3	JUPITER -1.4		SATURN +0.7		STARS				
G.M.T.	G.H.A.	G.H.A.	Dec.	G.H.A.	Dec.	G.H.A.	Dec.	G.H.A.	Dec.	Name	S.H.A.	Dec.	
d h													
SUNDAY	00	100 24.3	132 16.5 S14	39.2	1 18.5 N26	53.6	175 05.6 S22	47.2	169 13.8 S21	54.1	Acamar	315 48.2 S 40 27.9	
	01	115 26.8	147 16.2	38.1	16 22.0	53.7	190 07.5	47.1	184 15.9	54.0	Achernar	335 56.2 S 57 26.4	
	02	130 29.2	162 15.9	37.0	31 25.6	53.8	205 09.3	47.1	199 18.1	54.0	Acrux	173 53.5 S 62 52.7	
	03	145 31.7	177 15.6	36.0	46 29.1	53.9	220 11.2	47.0	214 20.2	54.0	Adhara	255 43.3 S 28 55.2	
	04	160 34.2	192 15.4	34.9	61 32.7	54.0	235 13.0	47.0	229 22.4	53.9	Aldebaran	291 34.6 N 16 25.8	
	05	175 36.6	207 15.1	33.8	76 36.3	54.1	250 14.8	46.9	244 24.5	53.9			
	06	190 39.1	222 14.8 S14	32.7	91 39.8 N26	54.2	265 16.7 S22	46.9	259 26.7 S21	53.8	Alioth	166 55.5 N 56 10.0	
	07	205 41.6	237 14.6	31.6	106 43.4	54.3	280 18.5	46.8	274 28.8	53.8	Alkaid	153 30.3 N 49 30.3	
	08	220 44.0	252 14.3	30.6	121 46.9	54.4	295 20.3	46.7	289 31.0	53.8	Al Na'ir	28 33.8 S 47 09.2	
	09	235 46.5	267 14.0	29.5	136 50.5	54.5	310 22.2	46.7	304 33.1	53.7	Alnilam	276 26.3 S 1 13.7	
	10	250 48.9	282 13.8	28.4	151 54.0	54.6	325 24.0	46.6	319 35.3	53.7	Alphard	218 34.8 S 8 29.4	
	11	265 51.4	297 13.5	27.3	166 57.6	54.8	340 25.8	46.6	334 37.4	53.6			
	12	280 53.9	312 13.2 S14	26.2	182 01.1 N26	54.9	355 27.7 S22	46.5	349 39.6 S21	53.6	Alphecca	126 44.9 N 26 50.7	
	13	295 56.3	327 13.0	25.1	197 04.7	55.0	10 29.5	46.5	4 41.7	53.6	Alpheratz	358 24.6 N 28 52.6	
	14	310 58.8	342 12.7	24.0	212 08.3	55.1	25 31.4	46.4	19 43.9	53.5	Altair	62 47.2 N 8 45.9	
	15	326 01.3	357 12.4	23.0	227 11.8	55.2	40 33.2	46.3	34 46.0	53.5	Ankaa	353 54.9 S 42 31.3	
	16	341 03.7	12 12.2	21.9	242 15.4	55.3	55 35.0	46.3	49 48.2	53.4	Antares	113 15.2 S 26 20.6	
	17	356 06.2	27 11.9	20.8	257 18.9	55.4	70 36.9	46.2	64 50.3	53.4			
	18	11 08.7	42 11.6 S14	19.7	272 22.5 N26	55.5	85 38.7 S22	46.2	79 52.5 S21	53.4	Arcturus	146 32.0 N 19 23.1	
	19	26 11.1	57 11.4	18.6	287 26.0	55.6	100 40.5	46.1	94 54.6	53.3	Atria	108 53.1 S 68 57.2	
	20	41 13.6	72 11.1	17.5	302 29.6	55.7	115 42.4	46.1	109 56.8	53.3	Avior	234 33.6 S 59 23.0	
	21	56 16.1	87 10.9	16.4	317 33.1	55.8	130 44.2	46.0	124 58.9	53.2	Bellatrix	279 14.2 N 6 18.8	
	22	71 18.5	102 10.6	15.3	332 36.7	55.9	145 46.1	45.9	140 01.1	53.2	Betelgeuse	271 43.9 N 7 23.9	
	23	86 21.0	117 10.4	14.2	347 40.2	56.0	160 47.9	45.9	155 03.2	53.2			
	MONDAY	00	101 23.4	132 10.1 S14	13.1	2 43.8 N26	56.1	175 49.7 S22	45.8	170 05.4 S21	53.1	Canopus	264 13.2 S 52 40.6
01		116 25.9	147 09.8	12.1	17 47.3	56.2	190 51.6	45.8	185 07.5	53.1	Capella	281 32.6 N 45 57.5	
02		131 28.4	162 09.6	11.0	32 50.9	56.3	205 53.4	45.7	200 09.7	53.1	Deneb	49 58.9 N 45 08.6	
03		146 30.8	177 09.3	09.9	47 54.4	56.4	220 55.2	45.6	215 11.8	53.0	Denebola	183 14.0 N 14 47.3	
04		161 33.3	192 09.1	08.8	62 58.0	56.5	235 57.1	45.6	230 14.0	53.0	Diphda	349 35.6 S 18 12.2	
05		176 35.8	207 08.8	07.7	78 01.5	56.6	250 58.9	45.5	245 16.1	52.9			
06		191 38.2	222 08.6 S14	06.6	93 05.1 N26	56.7	266 00.7 S22	45.5	260 18.3 S21	52.9	Dubhe	194 40.0 N 61 57.4	
07		206 40.7	237 08.3	05.5	108 08.6	56.8	281 02.6	45.4	275 20.4	52.9	Elnath	279 02.4 N 28 34.5	
08		221 43.2	252 08.1	04.4	123 12.2	56.9	296 04.4	45.4	290 22.6	52.8	Eltanin	91 05.1 N 51 29.7	
09		236 45.6	267 07.8	03.3	138 15.7	57.0	311 06.3	45.3	305 24.7	52.8	Enif	34 26.3 N 9 41.8	
10		251 48.1	282 07.6	02.2	153 19.3	57.1	326 08.1	45.2	320 26.9	52.7	Fomalhaut	16 07.9 S 29 49.9	
11		266 50.6	297 07.3	01.1	168 22.8	57.2	341 09.9	45.2	335 29.0	52.7			
12		281 53.0	312 07.1 S14	00.0	183 26.4 N26	57.3	356 11.8 S22	45.1	350 31.2 S21	52.7	Gacrux	172 45.0 S 56 53.4	
13		296 55.5	327 06.9	13 58.9	198 29.9	57.4	11 13.6	45.1	5 33.3	52.6	Gienah	176 33.1 S 17 19.4	
14		311 57.9	342 06.6	57.8	213 33.5	57.5	26 15.4	45.0	20 35.5	52.6	Hadar	149 44.3 S 60 10.8	
15		327 00.4	357 06.4	56.7	228 37.0	57.6	41 17.3	44.9	35 37.6	52.5	Hamal	328 45.4 N 23 16.7	
16		342 02.9	12 06.1	55.6	243 40.5	57.7	56 19.1	44.9	50 39.8	52.5	Kaus Aust.	84 36.8 S 34 24.2	
17		357 05.3	27 05.9	54.5	258 44.1	57.8	71 21.0	44.8	65 41.9	52.5			
18		12 07.8	42 05.6 S13	53.4	273 47.6 N26	57.9	86 22.8 S22	44.8	80 44.1 S21	52.4	Kochab	137 19.1 N 74 18.7	
19		27 10.3	57 05.4	52.3	288 51.2	58.0	101 24.6	44.7	95 46.2	52.4	Markab	14 18.0 N 14 59.7	
20		42 12.7	72 05.2	51.2	303 54.7	58.1	116 26.5	44.7	110 48.4	52.3	Menkar	314 56.3 N 3 56.1	
21		57 15.2	87 04.9	50.1	318 58.3	58.2	131 28.3	44.6	125 50.5	52.3	Menkent	148 54.5 S 36 10.5	
22		72 17.7	102 04.7	49.0	334 01.8	58.3	146 30.1	44.5	140 52.7	52.3	Miaplacidus	221 47.2 S 69 33.3	
23		87 20.1	117 04.4	47.9	349 05.3	58.4	161 32.0	44.5	155 54.8	52.2			
TUESDAY		00	102 22.6	132 04.2 S13	46.8	4 08.9 N26	58.5	176 33.8 S22	44.4	170 57.0 S21	52.2	Mirfak	309 36.8 N 49 43.5
	01	117 25.1	147 04.0	45.7	19 12.4	58.6	191 35.7	44.4	185 59.1	52.1	Nunki	76 47.8 S 26 20.7	
	02	132 27.5	162 03.7	44.6	34 16.0	58.7	206 37.5	44.3	201 01.3	52.1	Peacock	54 22.2 S 56 51.7	
	03	147 30.0	177 03.5	43.4	49 19.5	58.8	221 39.3	44.2	216 03.4	52.1	Pollux	244 15.8 N 28 07.1	
	04	162 32.4	192 03.3	42.3	64 23.0	58.9	236 41.2	44.2	231 05.6	52.0	Procyon	245 40.9 N 5 19.4	
	05	177 34.9	207 03.0	41.2	79 26.6	59.0	251 43.0	44.1	246 07.7	52.0			
	06	192 37.4	222 02.8 S13	40.1	94 30.1 N26	59.1	266 44.8 S22	44.1	261 09.9 S21	51.9	Rasalhague	96 43.6 N 12 35.3	
	07	207 39.8	237 02.6	39.0	109 33.7	59.1	281 46.7	44.0	276 12.0	51.9	Regulus	208 25.5 N 12 09.4	
	08	222 42.3	252 02.3	37.9	124 37.2	59.2	296 48.5	43.9	291 14.2	51.9	Rigel	281 49.8 S 8 14.9	
	09	237 44.8	267 02.1	36.8	139 40.7	59.3	311 50.3	43.9	306 16.3	51.8	Rigel Kent.	140 46.2 S 60 40.1	
	10	252 47.2	282 01.9	35.7	154 44.3	59.4	326 52.2	43.8	321 18.5	51.8	Sabik	102 58.3 S 15 40.5	
	11	267 49.7	297 01.7	34.6	169 47.8	59.5	341 54.0	43.8	336 20.6	51.7			
	12	282 52.2	312 01.4 S13	33.5	184 51.3 N26	59.6	356 55.9 S22	43.7	351 22.8 S21	51.7	Schedar	350 25.7 N 56 19.6	
	13	297 54.6	327 01.2	32.4	199 54.9	59.7	11 57.7	43.6	6 24.9	51.7	Shaula	97 16.2 S 37 04.4	
	14	312 57.1	342 01.0	31.2	214 58.4	59.8	26 59.5	43.6	21 27.1	51.6	Sirius	259 08.3 S 16 39.4	
	15	327 59.6	357 00.7	30.1	230 01.9	26 59.9	42 01.4	43.5	36 29.2	51.6	Spica	159 13.1 N 10 57.4	
	16	343 02.0	12 00.5	29.0	245 05.5	27 00.0	57 03.2	43.5	51 31.4	51.5	Suhail	223 21.2 S 43 16.4	
	17	358 04.5	27 00.3	27.9	260 09.0	00.1	72 05.0	43.4	66 33.5	51.5			
	18	13 06.9	42 00.1 S13	26.8	275 12.5 N27	00.1	87 06.9 S22	43.3	81 35.7 S21	51.5	Vega	81 06.2 N 38 44.9	
	19	28 09.4	56 59.9	25.7	290 16.1	00.2	102 08.7	43.3	96 37.8	51.4	Zuben'ubi	137 49.5 S 15 52.7	
	20	43 11.9	71 59.6	24.6	305 19.6	00.3	117 10.5	43.2	111 40.0	51.4			
	21	58 14.3	86 59.4	23.4	320 23.1	00.4	132 12.4	43.2	126 42.1	51.3			
	22	73 16.8	101 59.2	22.3	335 26.7	00.5	147 14.2	43.1	141 44.3	51.3	Venus	30 46.7 h m 15 12	
	23	88 19.3	116 59.0	21.2	350 30.2	00.6	162 16.1	43.0	156 46.4	51.3	Mars	261 20.4 23 43	
											Jupiter	74 26.3 12 15	
										Saturn	68 42.0 12 38		
Mer. Pass.	17 11.6	v -0.2	d 1.1	v 3.5	d 0.1	v 1.8	d 0.1	v 2.1	d 0.0				

G.M.T.		SUN		MOON				Lat.	Twilight		Sun-rise	Moonrise									
		G.H.A.	Dec.	G.H.A.	Dec.	d	H.P.		Naut.	Civil		1	2	3	4						
d	h	°	'	°	'	°	'	°	'	h	m	h	m	h	m	h	m				
SUNDAY	00	179	09.2	S 23	02.3	10	35.6	11.9	N 18	44.2	1.0	54.2	N 72	08 23	10 40	■	□	14 41	16 30		
	01	194	08.9		02.1	25	06.5	11.9	N 18	45.2	0.9	54.2	N 70	08 04	09 48	■	□	13 08	14 12	15 34	17 03
	02	209	08.7		01.9	39	37.4	11.9	N 18	46.1	0.8	54.2	68	07 49	09 16	■	□	13 56	14 55	16 07	17 27
	03	224	08.4	..	01.7	54	08.3	12.0	N 18	46.9	0.7	54.2	66	07 37	08 52	10 26	14 27	15 23	16 31	17 45	
	04	239	08.1		01.5	68	39.3	11.9	N 18	47.6	0.6	54.2	64	07 26	08 34	09 49	14 50	15 45	16 49	18 00	
	05	254	07.8		01.3	83	10.2	11.9	N 18	48.2	0.6	54.2	62	07 17	08 18	09 22	15 09	16 02	17 04	18 12	
	06	269	07.5	S 23	01.1	97	41.1	12.0	N 18	48.8	0.4	54.2	60	07 09	08 05	09 02	15 24	16 17	17 17	18 23	
	07	284	07.2		00.9	112	12.1	11.9	N 18	49.2	0.4	54.2	N 58	07 02	07 54	08 45	15 37	16 29	17 28	18 32	
	08	299	06.9		00.7	126	43.0	11.9	N 18	49.6	0.3	54.2	56	06 56	07 44	08 31	15 48	16 40	17 38	18 40	
	09	314	06.6	..	00.5	141	13.9	12.0	N 18	49.9	0.2	54.2	54	06 50	07 35	08 19	15 57	16 49	17 46	18 47	
	10	329	06.3		00.3	155	44.9	12.0	N 18	50.1	0.1	54.2	52	06 44	07 28	08 08	16 06	16 58	17 54	18 53	
	11	344	06.0	23	00.1	170	15.9	11.9	N 18	50.2	0.0	54.2	50	06 39	07 20	07 58	16 14	17 05	18 00	18 59	
	12	359	05.7	S 22	59.9	184	46.8	12.0	N 18	50.2	0.1	54.1	45	06 28	07 05	07 38	16 31	17 21	18 15	19 11	
	13	14	05.4		59.7	199	17.8	12.0	N 18	50.1	0.1	54.1	N 40	06 18	06 52	07 22	16 44	17 34	18 27	19 21	
	14	29	05.1		59.5	213	48.8	12.0	N 18	50.0	0.3	54.1	35	06 09	06 40	07 08	16 56	17 45	18 37	19 30	
	15	44	04.8	..	59.3	228	19.8	12.0	N 18	49.7	0.3	54.1	30	06 00	06 30	06 56	17 06	17 55	18 46	19 37	
	16	59	04.5		59.1	242	50.8	12.0	N 18	49.4	0.5	54.1	20	05 44	06 11	06 35	17 23	18 12	19 01	19 51	
	17	74	04.2		58.9	257	21.8	12.0	N 18	48.9	0.5	54.1	N 10	05 28	05 54	06 17	17 38	18 27	19 14	20 02	
	18	89	03.9	S 22	58.7	271	52.8	12.1	N 18	48.4	0.6	54.1	0	05 12	05 38	06 00	17 53	18 40	19 27	20 13	
	19	104	03.7		58.4	286	23.9	12.0	N 18	47.8	0.6	54.1	S 10	04 53	05 20	05 43	18 07	18 54	19 40	20 23	
	20	119	03.4		58.2	300	54.9	12.1	N 18	47.2	0.8	54.1	20	04 31	05 00	05 25	18 22	19 09	19 53	20 35	
	21	134	03.1	..	58.0	315	26.0	12.0	N 18	46.4	0.9	54.1	30	04 03	04 36	05 03	18 40	19 25	20 08	20 48	
	22	149	02.8		57.8	329	57.0	12.1	N 18	45.5	0.9	54.1	35	03 44	04 21	04 50	18 50	19 35	20 17	20 55	
23	164	02.5		57.6	344	28.1	12.1	N 18	44.6	1.1	54.1	40	03 22	04 03	04 36	19 01	19 46	20 27	21 04		
												45	02 52	03 41	04 18	19 15	19 59	20 38	21 14		
MONDAY	00	179	02.2	S 22	57.4	358	59.2	12.1	N 18	43.5	1.1	54.1	S 50	02 09	03 12	03 56	19 32	20 15	20 53	21 26	
	01	194	01.9		57.1	13	30.3	12.1	N 18	42.4	1.2	54.1	52	01 43	02 58	03 46	19 40	20 23	20 59	21 31	
	02	209	01.6		56.9	28	01.4	12.1	N 18	41.2	1.3	54.1	54	01 03	02 40	03 34	19 49	20 31	21 07	21 37	
	03	224	01.3	..	56.7	42	32.5	12.2	N 18	39.9	1.3	54.1	56	///	02 19	03 20	19 58	20 40	21 15	21 44	
	04	239	01.0		56.5	57	03.7	12.2	N 18	38.6	1.5	54.0	58	///	01 51	03 04	20 10	20 51	21 24	21 52	
	05	254	00.7		56.3	71	34.9	12.1	N 18	37.1	1.5	54.0	S 60	///	01 08	02 44	20 22	21 03	21 35	22 00	
	06	269	00.4	S 22	56.1	86	06.0	12.2	N 18	35.6	1.7	54.0									
	07	284	00.1		55.8	100	37.2	12.2	N 18	33.9	1.7	54.0	Lat.	Sun-set	Twilight		Moonset				
	08	298	59.9		55.6	115	08.4	12.3	N 18	32.2	1.8	54.0			Civil	Naut.	1	2	3	4	
	09	313	59.6	..	55.4	129	39.7	12.2	N 18	30.4	1.9	54.0	$^{\circ}$	h	m	h	m	h	m	h	m
	10	328	59.3		55.2	144	10.9	12.3	N 18	28.5	2.0	54.0	N 72	■	13 29	15 45	□	□	11 57	11 42	
	11	343	59.0		54.9	158	42.2	12.2	N 18	26.5	2.0	54.0	N 70	■	14 20	16 04	10 13	10 48	11 03	11 09	
	12	358	58.7	S 22	54.7	173	13.4	12.3	N 18	24.5	2.2	54.0	68	■	14 52	16 19	09 24	10 05	10 29	10 45	
	13	13	58.4		54.5	187	44.7	12.3	N 18	22.3	2.2	54.0	66	13 42	15 16	16 32	08 53	09 36	10 05	10 25	
	14	28	58.1		54.3	202	16.0	12.4	N 18	20.1	2.3	54.0	64	14 20	15 35	16 42	08 30	09 14	09 46	10 10	
	15	43	57.8	..	54.0	216	47.4	12.3	N 18	17.8	2.4	54.0	62	14 46	15 50	16 51	08 12	08 56	09 31	09 58	
	16	58	57.5		53.8	231	18.7	12.4	N 18	15.4	2.5	54.0	60	15 06	16 03	16 59	07 57	08 42	09 18	09 46	
	17	73	57.2		53.6	245	50.1	12.3	N 18	12.9	2.5	54.0	N 58	15 23	16 14	17 06	07 44	08 29	09 06	09 37	
	18	88	57.0	S 22	53.3	260	21.4	12.5	N 18	10.4	2.6	54.0	56	15 37	16 24	17 13	07 33	08 18	08 57	09 29	
	19	103	56.7		53.1	274	52.9	12.4	N 18	07.8	2.8	54.0	54	15 50	16 33	17 19	07 23	08 09	08 48	09 21	
	20	118	56.4		52.9	289	24.3	12.4	N 18	05.0	2.8	54.0	52	16 00	16 41	17 24	07 14	08 00	08 40	09 14	
	21	133	56.1	..	52.6	303	55.7	12.5	N 18	02.2	2.9	54.0	50	16 10	16 48	17 29	07 07	07 53	08 33	09 08	
	22	148	55.8		52.4	318	27.2	12.5	N 17	59.3	2.9	54.0	45	16 30	17 04	17 41	06 50	07 37	08 18	08 56	
23	163	55.5		52.2	332	58.7	12.5	N 17	56.4	3.1	54.0	N 40	16 46	17 17	17 51	06 36	07 23	08 06	08 45		
TUESDAY	00	178	55.2	S 22	51.9	347	30.2	12.5	N 17	53.3	3.1	54.0	35	17 00	17 28	18 00	06 25	07 12	07 55	08 35	
	01	193	54.9		51.7	2	01.7	12.6	N 17	50.2	3.2	54.0	30	17 12	17 38	18 08	06 15	07 02	07 46	08 28	
	02	208	54.6		51.5	16	33.3	12.5	N 17	47.0	3.3	54.0	20	17 33	17 57	18 24	05 57	06 45	07 30	08 13	
	03	223	54.3	..	51.2	31	04.8	12.6	N 17	43.7	3.4	54.0	N 10	17 51	18 14	18 40	05 42	06 30	07 16	08 01	
	04	238	54.1		51.0	45	36.4	12.6	N 17	40.3	3.4	54.0	0	18 08	18 30	18 56	05 28	06 16	07 03	07 49	
	05	253	53.8		50.8	60	08.0	12.7	N 17	36.9	3.5	54.0	S 10	18 25	18 48	19 15	05 14	06 02	06 50	07 38	
	06	268	53.5	S 22	50.5	74	39.7	12.6	N 17	33.4	3.6	54.0	20	18 43	19 08	19 37	04 58	05 47	06 35	07 25	
	07	283	53.2		50.3	89	11.3	12.7	N 17	29.8	3.7	54.0	30	19 05	19 32	20 05	04 41	05 29	06 19	07 11	
	08	298	52.9		50.0	103	43.0	12.7	N 17	26.1	3.8	54.0	35	19 18	19 47	20 23	04 31	05 19	06 10	07 02	
	09	313	52.6	..	49.8	118	14.7	12.7	N 17	22.3	3.8	54.0	40	19 32	20 05	20 46	04 19	05 08	05 59	06 53	
	10	328	52.3		49.5	132	46.4	12.8	N 17	18.5	3.9	54.0	45	19 50	20 27	21 15	04 05	04 54	05 46	06 42	
	11	343	52.0		49.3	147	18.2	12.8	N 17	14.6	4.0	54.0	S 50	20 12	20 55	21 59	03 49	04 38	05 31	06 28	
	12	358	51.8	S 22	49.1	161	50.0	12.8	N												

G.M.T.	ARIES		VENUS -3.8		MARS -1.2		JUPITER -1.4		SATURN +0.7		STARS		
	G.H.A.		G.H.A.	Dec.	G.H.A.	Dec.	G.H.A.	Dec.	G.H.A.	Dec.	Name	S.H.A.	Dec.
d h	° ' "	° ' "	° ' "	° ' "	° ' "	° ' "	° ' "	° ' "	° ' "	° ' "	° ' "	° ' "	° ' "
WEDNESDAY	4 00	103 21.7	131 58.8	S13 20.1	5 33.7	N27 00.7	177 17.9	S22 43.0	171 48.6	S21 51.2	Acamar	315 48.2	S 40 27.9
	01	118 24.2	146 58.5	19.0	20 37.3	00.8	192 19.7	42.9	186 50.7	51.2	Achernar	335 56.2	S 57 26.4
	02	133 26.7	161 58.3	17.9	35 40.8	00.9	207 21.6	42.9	201 52.9	51.1	Acrux	173 53.4	S 62 52.7
	03	148 29.1	176 58.1	16.7	50 44.3	00.9	222 23.4	42.8	216 55.0	51.1	Adhara	255 43.3	S 28 55.2
	04	163 31.6	191 57.9	15.6	65 47.8	01.0	237 25.2	42.7	231 57.2	51.1	Aldebaran	291 34.6	N 16 25.8
	05	178 34.0	206 57.7	14.5	80 51.4	01.1	252 27.1	42.7	246 59.3	51.0			
	06	193 36.5	221 57.5	S13 13.4	95 54.9	N27 01.2	267 28.9	S22 42.6	262 01.5	S21 51.0	Alioth	166 55.5	N 56 10.0
	07	208 39.0	236 57.3	12.3	110 58.4	01.3	282 30.7	42.6	277 03.6	50.9	Alkaid	153 30.3	N 49 30.3
	08	223 41.4	251 57.0	11.1	126 01.9	01.4	297 32.6	42.5	292 05.7	50.9	Al Na'ir	28 33.8	S 47 09.2
	09	238 43.9	266 56.8	10.0	141 05.5	01.5	312 34.4	42.4	307 07.9	50.9	Alnilam	276 26.3	S 1 13.7
	10	253 46.4	281 56.6	08.9	156 09.0	01.5	327 36.3	42.4	322 10.0	50.8	Alphard	218 34.7	S 8 29.4
	11	268 48.8	296 56.4	07.8	171 12.5	01.6	342 38.1	42.3	337 12.2	50.8			
	12	283 51.3	311 56.2	S13 06.7	186 16.0	N27 01.7	357 39.9	S22 42.3	352 14.3	S21 50.7	Alphecca	126 44.8	N 26 50.7
	13	298 53.8	326 56.0	05.5	201 19.5	01.8	12 41.8	42.2	7 16.5	50.7	Alpheratz	358 24.6	N 28 52.6
	14	313 56.2	341 55.8	04.4	216 23.1	01.9	27 43.6	42.1	22 18.6	50.7	Altair	62 47.2	N 8 45.9
	15	328 58.7	356 55.6	03.3	231 26.6	02.0	42 45.4	42.1	37 20.8	50.6	Ankaa	353 54.9	S 42 31.3
	16	344 01.2	11 55.4	02.2	246 30.1	02.0	57 47.3	42.0	52 22.9	50.6	Antares	113 15.2	S 26 20.6
	17	359 03.6	26 55.2	13 01.0	261 33.6	02.1	72 49.1	42.0	67 25.1	50.5			
	18	14 06.1	41 55.0	S12 59.9	276 37.1	N27 02.2	87 51.0	S22 41.9	82 27.2	S21 50.5	Arcturus	146 32.0	N 19 23.1
	19	29 08.5	56 54.8	58.8	291 40.7	02.3	102 52.8	41.8	97 29.4	50.5	Atria	108 53.1	S 68 57.2
	20	44 11.0	71 54.6	57.6	306 44.2	02.4	117 54.6	41.8	112 31.5	50.4	Avior	234 33.5	S 59 23.0
	21	59 13.5	86 54.4	56.5	321 47.7	02.4	132 56.5	41.7	127 33.7	50.4	Bellatrix	279 14.2	N 6 18.8
	22	74 15.9	101 54.2	55.4	336 51.2	02.5	147 58.3	41.7	142 35.8	50.3	Betelgeuse	271 43.9	N 7 23.9
	23	89 18.4	116 54.0	54.3	351 54.7	02.6	163 00.1	41.6	157 38.0	50.3			
THURSDAY	5 00	104 20.9	131 53.8	S12 53.1	6 58.2	N27 02.7	178 02.0	S22 41.5	172 40.1	S21 50.3	Canopus	264 13.2	S 52 40.6
	01	119 23.3	146 53.6	52.0	22 01.8	02.8	193 03.8	41.5	187 42.3	50.2	Capella	281 32.6	N 45 57.5
	02	134 25.8	161 53.4	50.9	37 05.3	02.8	208 05.7	41.4	202 44.7	50.2	Deneb	49 58.9	N 45 08.6
	03	149 28.3	176 53.2	49.7	52 08.8	02.9	223 07.5	41.4	217 46.6	50.1	Denebola	183 14.0	N 14 47.3
	04	164 30.7	191 53.0	48.6	67 12.3	03.0	238 09.3	41.3	232 48.7	50.1	Diphda	349 35.6	S 18 12.2
	05	179 33.2	206 52.8	47.5	82 15.8	03.1	253 11.2	41.2	247 50.9	50.1			
	06	194 35.7	221 52.6	S12 46.3	97 19.3	N27 03.2	268 13.0	S22 41.2	262 53.0	S21 50.0	Dubhe	194 40.0	N 61 57.4
	07	209 38.1	236 52.4	45.2	112 22.8	03.2	283 14.8	41.1	277 55.2	50.0	El Nath	279 02.4	N 28 34.5
	08	224 40.6	251 52.2	44.1	127 26.3	03.3	298 16.7	41.0	292 57.3	49.9	Eltanin	91 05.1	N 51 29.6
	09	239 43.0	266 52.0	42.9	142 29.8	03.4	313 18.5	41.0	307 59.5	49.9	Enif	34 26.3	N 9 41.8
	10	254 45.5	281 51.8	41.8	157 33.4	03.5	328 20.3	40.9	323 01.6	49.9	Fomalhaut	16 07.9	S 29 49.9
	11	269 48.0	296 51.6	40.7	172 36.9	03.5	343 22.2	40.9	338 03.8	49.8			
	12	284 50.4	311 51.4	S12 39.5	187 40.4	N27 03.6	358 24.0	S22 40.8	353 05.9	S21 49.8	Gacrux	172 44.9	S 56 53.4
	13	299 52.9	326 51.2	38.4	202 43.9	03.7	13 25.9	40.7	8 08.1	49.7	Gienah	176 33.0	S 17 19.4
	14	314 55.4	341 51.0	37.3	217 47.4	03.8	28 27.7	40.7	23 10.2	49.7	Hadar	149 44.3	S 60 10.8
	15	329 57.8	356 50.9	36.1	232 50.9	03.8	43 29.5	40.6	38 12.4	49.7	Hamal	328 45.4	N 23 16.7
	16	345 00.3	11 50.7	35.0	247 54.4	03.9	58 31.4	40.6	53 14.5	49.6	Kaus Aust.	84 36.8	S 34 24.1
	17	0 02.8	26 50.5	33.9	262 57.9	04.0	73 33.2	40.5	68 16.7	49.6			
	18	15 05.2	41 50.3	S12 32.7	278 01.4	N27 04.1	88 35.0	S22 40.4	83 18.8	S21 49.5	Kochab	137 19.1	N 74 18.7
	19	30 07.7	56 50.1	31.6	293 04.9	04.1	103 36.9	40.4	98 21.0	49.5	Markab	14 18.0	N 14 59.7
	20	45 10.1	71 49.9	30.5	308 08.4	04.2	118 38.7	40.3	113 23.1	49.5	Menkar	314 56.3	N 3 56.1
	21	60 12.6	86 49.7	29.3	323 11.9	04.3	133 40.5	40.2	128 25.3	49.4	Menkent	148 54.4	S 36 10.5
	22	75 15.1	101 49.6	28.2	338 15.4	04.4	148 42.4	40.2	143 27.4	49.4	Miaplacidus	221 47.2	S 69 33.3
	23	90 17.5	116 49.4	27.0	353 18.9	04.5	163 44.2	40.1	158 29.6	49.3			
FRIDAY	6 00	105 20.0	131 49.2	S12 25.9	8 22.4	N27 04.4	178 46.1	S22 40.1	173 31.7	S21 49.3	Mirfak	309 36.8	N 49 43.5
	01	120 22.5	146 49.0	24.8	23 25.9	04.6	193 47.9	40.0	188 33.9	49.3	Nunki	76 47.8	S 26 20.7
	02	135 24.9	161 48.8	23.6	38 29.4	04.6	208 49.7	39.9	203 36.0	49.2	Peacock	54 22.2	S 56 51.7
	03	150 27.4	176 48.7	22.5	53 32.9	04.7	223 51.6	39.9	218 38.2	49.2	Pollux	244 15.8	N 28 07.1
	04	165 29.9	191 48.5	21.3	68 36.4	04.8	238 53.4	39.8	233 40.3	49.1	Procyon	245 40.9	N 5 19.4
	05	180 32.3	206 48.3	20.2	83 39.9	04.9	253 55.2	39.7	248 42.5	49.1			
	06	195 34.8	221 48.1	S12 19.0	98 43.4	N27 04.9	268 57.1	S22 39.7	263 44.6	S21 49.1	Rasalhague	96 43.5	N 12 35.3
	07	210 37.3	236 47.9	17.9	113 46.9	05.0	283 58.9	39.6	278 46.8	49.0	Regulus	208 25.4	N 12 09.4
	08	225 39.7	251 47.8	16.8	128 50.4	05.1	299 00.8	39.6	293 48.9	49.0	Rigel	281 49.8	S 8 14.9
	09	240 42.2	266 47.6	15.6	143 53.9	05.1	314 02.6	39.5	308 51.1	48.9	Rigel Kent.	140 46.1	S 60 40.1
	10	255 44.6	281 47.4	14.5	158 57.4	05.2	329 04.4	39.4	323 53.2	48.9	Sabik	102 58.3	S 15 40.5
	11	270 47.1	296 47.3	13.3	174 00.8	05.3	344 06.3	39.4	338 55.4	48.8			
	12	285 49.6	311 47.1	S12 12.2	189 04.3	N27 05.3	359 08.1	S22 39.3	353 57.5	S21 48.8	Schedar	350 25.7	N 56 19.6
	13	300 52.0	326 46.9	11.0	204 07.8	05.4	14 09.9	39.2	8 59.7	48.8	Shaula	97 16.1	S 37 04.4
	14	315 54.5	341 46.7	09.9	219 11.3	05.5	29 11.8	39.2	24 01.8	48.7	Sirius	259 08.3	S 16 39.9
	15	330 57.0	356 46.6	08.7	234 14.8	05.6	44 13.6	39.1	39 03.9	48.7	Spica	159 13.1	S 10 57.4
	16	345 59.4	11 46.4	07.6	249 18.3	05.6	59 15.4	39.1	54 06.1	48.6	Suhail	223 21.2	S 43 16.4
	17	1 01.9	26 46.2	06.4	264 21.8	05.7	74 17.3	39.0	69 08.2	48.6			
	18	16 04.4	41 46.1	S12 05.3	279 25.3	N27 05.8	89 19.1	S22 38.9	84 10.4	S21 48.6	Vega	81 06.2	N 38 44.9
	19	31 06.8	56 45.9	04.1	294 28.7	05.8	104 21.0	38.9	99 12.5	48.5	Zuben'ubi	137 49.5	S 15 52.7
	20	46 09.3	71 45.7	03.0	309 32.2	05.9	119 22.8	38.8	114 14.7	48.5			
	21	61 11.8	86 45.6	01.9	324 35.7	06.0	134 24.6	38.7	129 16.8	48.4		S.H.A.	Mer. Pass.
	22	76 14.2	101 45.4	12 00.7	339 39.2	06.0	149 26.5	38.7	144 19.0	48.4	Venus	27 32.9	15 13
	23	91 16.7	116 45.2	11 59.5	354 42.7	06.1	164 28.3	38.6	159 21.1	48.4	Mars	262 37.3	23 27
											Jupiter	73 41.1	12 06
											Saturn	68 19.2	12 28
Mer. Pass. 16 58 m		v -0.2	d 1.1		v 3.5	d 0.1	v 1.8	d 0.1	v 2.1	d 0.0			

G.M.T.		SUN		MOON				Lat.	Twilight		Sun-rise	Moonrise																
		G.H.A.	Dec.	G.H.A.	<i>v</i>	Dec.	<i>d</i>		H.P.	Naut.		Civil	4	5	6	7												
d	h	°	'	°	'	°	'	°	'	°	'	h	m	h	m	h	m	h	m									
WEDNESDAY	4	00	178	48.3	S 22	46.1	336	13.2	13.1	N 16	16.8	5.0	54.0	N 70	08	02	09	43	17	03	18	34	20	05	21	35		
	01	00	193	48.0		45.8	350	45.3	13.1	16	11.8	5.0	54.0	68	07	47	09	12	11	30	17	27	18	50	20	15	21	41
	02	00	208	47.8		45.5	5	17.4	13.2	16	06.8	5.1	54.0	66	07	35	08	50	10	20	17	45	19	03	20	23	21	45
	03	00	223	47.5	..	45.3	19	49.6	13.2	16	01.7	5.2	54.0	64	07	25	08	32	09	45	18	00	19	14	20	31	21	48
	04	00	238	47.2		45.0	34	21.8	13.2	15	56.5	5.2	54.0	62	07	16	08	17	09	20	18	12	19	23	20	37	21	52
	05	00	253	46.9		44.8	48	54.0	13.2	15	51.3	5.3	54.0	60	07	08	08	04	09	00	18	23	19	31	20	42	21	54
	06	00	268	46.6	S 22	44.5	63	26.2	13.2	N 15	46.0	5.4	54.0	N 58	07	01	07	53	08	44	18	32	19	38	20	47	21	57
	07	00	283	46.3		44.2	77	58.4	13.3	15	40.6	5.5	54.0	56	06	55	07	43	08	30	18	40	19	44	20	51	21	59
	08	00	298	46.0		44.0	92	30.7	13.3	15	35.1	5.5	54.0	54	06	49	07	35	08	18	18	47	19	50	20	55	22	01
	09	00	313	45.8	..	43.7	107	03.0	13.3	15	29.6	5.6	54.0	52	06	44	07	27	08	07	18	53	19	55	20	58	22	02
	10	00	328	45.5		43.5	121	35.3	13.4	15	24.0	5.6	54.0	50	06	39	07	20	07	58	18	59	19	59	21	01	22	04
	11	00	343	45.2		43.2	136	07.7	13.4	15	18.4	5.8	54.0	45	06	28	07	05	07	38	19	11	20	09	21	08	22	07
	12	00	358	44.9	S 22	42.9	150	40.1	13.4	N 15	12.6	5.8	54.0	N 40	06	18	06	52	07	22	19	21	20	17	21	13	22	10
	13	00	13	44.6		42.7	165	12.5	13.4	15	06.8	5.8	54.0	35	06	09	06	41	07	08	19	30	20	24	21	18	22	13
	14	00	28	44.4		42.4	179	44.9	13.4	15	01.0	5.9	54.0	30	06	01	06	30	06	57	19	37	20	29	21	22	22	15
	15	00	43	44.1	..	42.1	194	17.3	13.5	14	55.1	6.0	54.0	20	05	45	06	12	06	36	19	51	20	40	21	29	22	19
	16	00	58	43.8		41.9	208	49.8	13.5	14	49.1	6.1	54.0	N 10	05	30	05	56	06	18	20	02	20	49	21	36	22	22
	17	00	73	43.5		41.6	223	22.3	13.5	14	43.0	6.1	54.0	0	05	13	05	39	06	02	20	13	20	57	21	42	22	25
	18	00	88	43.2	S 22	41.3	237	54.8	13.6	N 14	36.9	6.2	54.0	S 10	04	55	05	22	05	45	20	23	21	06	21	47	22	28
	19	00	103	42.9		41.1	252	27.4	13.6	14	30.7	6.2	54.0	20	04	33	05	02	05	26	20	35	21	15	21	54	22	32
	20	00	118	42.7		40.8	267	00.0	13.6	14	24.5	6.3	54.0	30	04	05	04	38	05	05	20	48	21	25	22	01	22	36
	21	00	133	42.4	..	40.5	281	32.6	13.6	14	18.2	6.4	54.1	35	03	47	04	23	04	53	20	55	21	31	22	05	22	38
	22	00	148	42.1		40.3	296	05.2	13.6	14	11.8	6.4	54.1	40	03	25	04	06	04	38	21	04	21	38	22	10	22	40
	23	00	163	41.8		40.0	310	37.8	13.7	14	05.4	6.5	54.1	45	02	56	03	44	04	21	21	14	21	45	22	15	22	43
THURSDAY	5	00	178	41.5	S 22	39.7	325	10.5	13.7	N 13	58.9	6.5	54.1	S 50	02	13	03	16	04	00	21	26	21	55	22	21	22	46
	01	00	193	41.3		39.4	339	43.2	13.7	13	52.4	6.7	54.1	52	01	49	03	02	03	49	21	31	21	59	22	24	22	48
	02	00	208	41.0		39.2	354	15.9	13.8	13	45.7	6.6	54.1	54	01	12	02	45	03	38	21	37	22	04	22	27	22	50
	03	00	223	40.7	..	38.9	8	48.7	13.8	13	39.1	6.8	54.1	56	///	///	02	25	03	24	21	44	22	09	22	31	22	51
	04	00	238	40.4		38.6	23	21.5	13.7	13	32.3	6.8	54.1	58	///	///	01	58	03	08	21	52	22	15	22	35	22	53
	05	00	253	40.1		38.3	37	54.2	13.9	13	25.5	6.8	54.1	S 60	///	///	01	18	02	49	22	00	22	21	22	39	22	56
	06	00	268	39.9	S 22	38.1	52	27.1	13.8	N 13	18.7	6.9	54.1	Moonset														
	07	00	283	39.6		37.8	66	59.9	13.8	13	11.8	7.0	54.1	Lat.	Sun-set	Twilight		Moonset										
	08	00	298	39.3		37.5	81	32.7	13.9	13	04.8	7.0	54.1	Civil	Naut.	4	5	6	7									
	09	00	313	39.0	..	37.2	96	05.6	13.9	12	57.8	7.1	54.1	°	h m	h m	h m	h m	h m	h m	h m	h m	h m	h m	h m	h m	h m	h m
	10	00	328	38.7		36.9	110	38.5	14.0	12	50.7	7.1	54.1	N 72	■	13	41	15	52	11	42	11	33	11	26	11	20	
	11	00	343	38.5		36.7	125	11.5	13.9	12	43.6	7.2	54.1	N 70	■	14	28	16	10	11	09	11	11	11	12	11	11	
	12	00	358	38.2	S 22	36.4	139	44.4	14.0	N 12	36.4	7.3	54.2	68	12	41	14	59	16	24	10	45	10	54	11	00	11	05
	13	00	13	37.9		36.1	154	17.4	14.0	12	29.1	7.3	54.2	66	13	51	15	22	16	36	10	25	10	40	10	51	10	59
	14	00	28	37.6		35.8	168	50.4	14.0	12	21.8	7.3	54.2	64	14	26	15	40	16	46	10	10	10	28	10	42	10	54
	15	00	43	37.3	..	35.5	183	23.4	14.0	12	14.5	7.4	54.2	62	14	52	15	55	16	55	09	58	10	18	10	35	10	50
	16	00	58	37.1		35.2	197	56.4	14.0	12	07.1	7.5	54.2	60	15	11	16	07	17	03	09	46	10	10	10	29	10	46
	17	00	73	36.8		34.9	212	29.4	14.1	11	59.6	7.5	54.2	N 58	15	28	16	18	17	10	09	37	10	02	10	24	10	43
	18	00	88	36.5	S 22	34.7	227	02.5	14.1	N 11	52.1	7.6	54.2	56	15	41	16	28	17	16	09	29	09	56	10	19	10	40
	19	00	103	36.2		34.4	241	35.6	14.1	11	44.5	7.6	54.2	54	15	53	16	36	17	22	09	21	09	50	10	15	10	37
	20	00	118	36.0		34.1	256	08.7	14.1	11	36.9	7.7	54.2	52	16	04	16	44	17	27	09	14	09	44	10	11	10	35
	21	00	133	35.7	..	33.8	270	41.8	14.2	11	29.2	7.7	54.2	50	16	13	16	51	17	32	09	08	09	39	10	07	10	33
	22	00	148	35.4		33.5	285	15.0	14.1	11	21.5	7.8	54.3	45	16	33	17	06	17	43	08	56	09	29	09	59	10	28
	23	00	163	35.1		33.2	299	48.1	14.2	11	13.7	7.8	54.3	N 40	16	49	17	19	17	53	08	45	09	20	09	53	10	22
FRIDAY	6	00	178	34.9	S 22	32.9	314	21.3	14.2	N 11	05.9	7.9	54.3	35	17	02	17	30	18	02	08	35	09	13	09	47	10	20
	01	00	193	34.6		32.6	328	54.5	14.2	10	58.0	7.9	54.3	30	17	14	17	40	18	10	08	28	09	06	09	42	10	17
	02	00	208	34.3		32.3	343	27.7	14.2	10	50.1	8.0	54.3	20	17	35	17	59	18	26	08	13	08	54	09	34	10	12
	03	00	223	34.0	..	32.0	358	00.9	14.3	10	42.1	8.0	54.3	N 10	17	52	18	15	18	41	08	01	08	44	09	26	10	07
	04	00	238	33.8		31.7	12	34.2	14.2	10	34.1	8.1	54.3	0	18	09	18	32	18	57	07	49	08	35	09	19	10	03
	05	00	253	33.5		31.5	27	07.4	14.3	10	26.0	8.1	54.3	S 10	18	26	18	49	19	16	07	38	08	25	09	12	09	58
	06	00	268	33.2	S 22	31.2	41	40.7	14.3	N 10	17.9	8.1	54.3	20	18	44	19	09	19	38	07	25	08	14	09	04	09	53
	07	00	283	32.9		30.9	56	14.0	14.3	10	09.8	8.2	54.4	30	19	05	19	33	20	05	07	11	08	03	08	55	09	47
	08	00	298	32.7		30.6	70	47.3	14.3	10	01.6	8.3	54.4	35	19	18	19	47	20	23	07	02	07	56	08	50	09	44
	09	00	313	32.4	..	30.3	85	20.6	14.3																			

		ARIES		VENUS -3-9		MARS -1-2		JUPITER -1-4		SATURN +0-7		STARS			
G.M.T.		G.H.A.	G.H.A.	Dec.	G.H.A.	Dec.	G.H.A.	Dec.	G.H.A.	Dec.	G.H.A.	Dec.	Name	S.H.A.	Dec.
d	h														
SATURDAY	7 00	106 19.1	131 45.1	S 11 58.4	9 46.2	N 27 06.2	179 30.2	S 22 38.6	174 23.3	S 21 48.3	Acamar	315 48.2	S 40 28.0		
	01	121 21.6	146 44.9	57.2	24 49.6	06.2	194 32.0	38.5	189 25.4	48.3	Achernar	335 56.2	S 57 26.4		
	02	136 24.1	161 44.8	56.1	39 53.1	06.3	209 33.8	38.4	204 27.6	48.2	Acrux	173 53.4	S 62 52.7		
	03	151 26.5	176 44.6	.. 54.9	54 56.6	.. 06.3	224 35.7	.. 38.4	219 29.7	.. 48.2	Adhara	255 43.3	S 28 55.2		
	04	166 29.0	191 44.4	53.8	70 00.1	06.4	239 37.5	38.3	234 31.9	48.2	Aldebaran	291 34.6	N 16 25.8		
	05	181 31.5	206 44.3	52.6	85 03.6	06.5	254 39.3	38.2	249 34.0	48.1					
	06	196 33.9	221 44.1	S 11 51.5	100 07.0	N 27 06.5	269 41.2	S 22 38.2	264 36.2	S 21 48.1	Alioth	166 55.5	N 56 10.0		
	07	211 36.4	236 44.0	50.3	115 10.5	06.6	284 43.0	38.1	279 38.3	48.0	Alkaid	153 30.2	N 49 30.2		
	08	226 38.9	251 43.8	49.2	130 14.0	06.7	299 44.8	38.0	294 40.5	48.0	Al Na'ir	28 33.8	S 47 09.9		
	09	241 41.3	266 43.6	.. 48.0	145 17.4	.. 06.7	314 46.7	.. 38.0	309 42.6	.. 47.9	Alnilam	276 26.3	S 1 13.7		
	10	256 43.8	281 43.5	46.9	160 20.9	06.8	329 48.5	37.9	324 44.8	47.9	Alphard	218 34.7	S 8 29.4		
	11	271 46.3	296 43.3	45.7	175 24.4	06.8	344 50.4	37.9	339 46.9	47.9					
	12	286 48.7	311 43.2	S 11 44.6	190 27.9	N 27 06.9	359 52.2	S 22 37.8	354 49.1	S 21 47.8	Alphecca	126 44.8	N 26 50.7		
	13	301 51.2	326 43.0	43.4	205 31.3	07.0	14 54.0	37.7	9 51.2	47.8	Alpheratz	358 24.6	N 28 52.6		
	14	316 53.6	341 42.9	42.2	220 34.8	07.0	29 55.9	37.7	24 53.4	47.7	Altair	62 47.2	N 8 45.9		
	15	331 56.1	356 42.7	.. 41.1	235 38.3	.. 07.1	44 57.7	.. 37.6	39 55.5	.. 47.7	Ankaa	353 54.9	S 42 31.3		
	16	346 58.6	11 42.6	39.9	250 41.7	07.1	59 59.5	37.5	54 57.7	47.7	Antares	113 15.2	S 26 20.6		
	17	2 01.0	26 42.4	38.8	265 45.2	07.2	75 01.4	37.5	69 59.8	47.6					
	18	17 03.5	41 42.3	S 11 37.6	280 48.7	N 27 07.3	90 03.2	S 22 37.4	85 02.0	S 21 47.6	Arcturus	146 32.0	N 19 23.0		
	19	32 06.0	56 42.1	36.4	295 52.1	07.3	105 05.1	37.4	100 04.1	47.5	Atria	108 53.0	S 68 57.2		
	20	47 08.4	71 42.0	35.3	310 55.6	07.4	120 06.9	37.3	115 06.3	47.5	Avior	234 33.5	S 59 23.0		
	21	62 10.9	86 41.8	.. 34.1	325 59.1	.. 07.4	135 08.7	.. 37.2	130 08.4	.. 47.4	Bellatrix	279 14.2	N 6 18.8		
	22	77 13.4	101 41.7	33.0	341 02.5	07.5	150 10.6	37.2	145 10.5	47.4	Betelgeuse	271 43.9	N 7 23.9		
23	92 15.8	116 41.5	31.8	356 06.0	07.6	165 12.4	37.1	160 12.7	47.4						
SUNDAY	8 00	107 18.3	131 41.4	S 11 30.6	11 09.5	N 27 07.6	180 14.2	S 22 37.0	175 14.8	S 21 47.3	Canopus	264 13.2	S 52 40.6		
	01	122 20.7	146 41.3	29.5	26 12.9	07.7	195 16.1	37.0	190 17.0	47.3	Capella	281 32.6	N 45 57.6		
	02	137 23.2	161 41.1	28.3	41 16.4	07.7	210 17.9	36.9	205 19.1	47.2	Deneb	49 58.9	N 45 08.6		
	03	152 25.7	176 41.0	.. 27.2	56 19.8	.. 07.8	225 19.8	.. 36.8	220 21.3	.. 47.2	Denebola	183 13.9	N 14 47.3		
	04	167 28.1	191 40.8	26.0	71 23.3	07.8	240 21.6	36.8	235 23.4	47.2	Diphda	349 35.7	S 18 12.2		
	05	182 30.6	206 40.7	24.8	86 26.7	07.9	255 23.4	36.7	250 25.6	47.1					
	06	197 33.1	221 40.5	S 11 23.7	101 30.2	N 27 08.0	270 25.3	S 22 36.6	265 27.7	S 21 47.1	Dubhe	194 39.9	N 61 57.4		
	07	212 35.5	236 40.4	22.5	116 33.6	08.0	285 27.1	36.6	280 29.9	47.0	Elmath	279 02.4	N 28 34.5		
	08	227 38.0	251 40.3	21.3	131 37.1	08.1	300 28.9	36.5	295 32.0	47.0	Eltanin	91 05.1	N 51 29.6		
	09	242 40.5	266 40.1	.. 20.2	146 40.6	.. 08.1	315 30.8	.. 36.5	310 34.2	.. 47.0	Enif	34 26.3	N 9 41.8		
	10	257 42.9	281 40.0	19.0	161 44.0	08.2	330 32.6	36.4	325 36.3	46.9	Fomalhaut	16 07.9	S 29 49.9		
	11	272 45.4	296 39.9	17.9	176 47.5	08.2	345 34.4	36.3	340 38.5	46.9					
	12	287 47.9	311 39.7	S 11 16.7	191 50.9	N 27 08.3	0 36.3	S 22 36.3	355 40.6	S 21 46.8	Gacrux	172 44.9	S 56 53.4		
	13	302 50.3	326 39.6	15.5	206 54.4	08.3	15 38.1	36.2	10 42.8	46.8	Gienah	176 33.0	S 17 19.4		
	14	317 52.8	341 39.5	14.4	221 57.8	08.4	30 40.0	36.1	25 44.9	46.7	Genah	149 44.2	S 60 10.8		
	15	332 55.2	356 39.3	.. 13.2	237 01.3	.. 08.4	45 41.8	.. 36.1	40 47.1	.. 46.7	Hamal	328 45.4	N 23 16.7		
	16	347 57.7	11 39.2	12.0	252 04.7	08.5	60 43.6	36.0	55 49.2	46.7	Kaus Aust.	84 36.8	S 34 24.1		
	17	3 00.2	26 39.1	10.9	267 08.1	08.5	75 45.5	35.9	70 51.4	46.6					
	18	18 02.6	41 38.9	S 11 09.7	282 11.6	N 27 08.6	90 47.3	S 22 35.9	85 53.5	S 21 46.6	Kochab	137 19.0	N 74 18.7		
	19	33 05.1	56 38.8	08.5	297 15.0	08.7	105 49.1	35.8	100 55.7	46.5	Markab	14 18.0	N 14 59.7		
	20	48 07.6	71 38.7	07.3	312 18.5	08.7	120 51.0	35.7	115 57.8	46.5	Menkar	314 56.3	N 3 56.1		
	21	63 10.0	86 38.5	.. 06.2	327 21.9	.. 08.8	135 52.8	.. 35.7	131 00.0	.. 46.5	Menkent	148 54.4	S 36 10.5		
	22	78 12.5	101 38.4	05.0	342 25.4	08.8	150 54.7	35.6	146 02.1	46.4	Miaplacidus	221 47.2	S 69 33.3		
23	93 15.0	116 38.3	03.8	357 28.8	08.9	165 56.5	35.6	161 04.3	46.4						
MONDAY	9 00	108 17.4	131 38.2	S 11 02.7	12 32.2	N 27 08.9	180 58.3	S 22 35.5	176 06.4	S 21 46.3	Mirfak	309 36.8	N 49 43.9		
	01	123 19.9	146 38.0	01.5	27 35.7	09.0	196 00.2	35.4	191 08.6	46.3	Nunki	76 47.8	S 26 20.7		
	02	138 22.3	161 37.9	11 00.3	42 39.1	09.0	211 02.0	35.4	206 10.7	46.3	Peacock	54 22.2	S 56 51.7		
	03	153 24.8	176 37.8	10 59.2	57 42.6	.. 09.1	226 03.9	.. 35.3	221 12.9	.. 46.2	Pollux	244 15.8	N 28 07.1		
	04	168 27.3	191 37.7	58.0	72 46.0	09.1	241 05.7	35.2	236 15.0	46.2	Procyon	245 40.8	N 5 19.4		
	05	183 29.7	206 37.5	56.8	87 49.4	09.2	256 07.5	35.2	251 17.2	46.1					
	06	198 32.2	221 37.4	S 10 55.6	102 52.9	N 27 09.2	271 09.4	S 22 35.1	266 19.3	S 21 46.1	Rasalhague	96 43.5	N 12 35.3		
	07	213 34.7	236 37.3	54.5	117 56.3	09.2	286 11.2	35.0	281 21.5	46.0	Regulus	208 25.4	N 12 09.4		
	08	228 37.1	251 37.2	53.3	132 59.7	09.3	301 13.0	35.0	296 23.6	46.0	Rigel	281 49.8	S 8 14.9		
	09	243 39.6	266 37.1	.. 52.1	148 03.1	.. 09.3	316 14.9	.. 34.9	311 25.8	.. 46.0	Rigel Kent.	140 46.1	S 60 40.1		
	10	258 42.1	281 36.9	50.9	163 06.6	09.4	331 16.7	34.8	326 27.9	45.9	Sabik	102 58.3	S 15 40.5		
	11	273 44.5	296 36.8	49.8	178 10.0	09.4	346 18.6	34.8	341 30.1	45.9					
	12	288 47.0	311 36.7	S 10 48.6	193 13.4	N 27 09.5	1 20.4	S 22 34.7	356 32.2	S 21 45.8	Schedar	350 25.7	N 56 19.6		
	13	303 49.5	326 36.6	47.4	208 16.9	09.5	16 22.2	34.6	11 34.3	45.8	Shaula	97 16.1	S 37 04.4		
	14	318 51.9	341 36.5	46.2	223 20.3	09.6	31 24.1	34.6	26 36.5	45.8	Sirius	259 08.3	S 16 39.9		
	15	333 54.4	356 36.4	.. 45.1	238 23.7	.. 09.6	46 25.9	.. 34.5	41 38.6	.. 45.7	Spica	159 13.0	S 10 57.4		
	16	348 56.8	11 36.2	43.9	253 27.1	09.7	61 27.7	34.4	56 40.8	45.7	Suhail	223 21.2	S 43 16.4		
	17	3 59.3	26 36.1	42.7	268 30.6	09.7	76 29.6	34.4	71 42.9	45.6					
	18	19 01.8	41 36.0	S 10 41.5	283 34.0	N 27 09.8	91 31.4	S 22 34.3	86 45.1	S 21 45.6	Vega	81 06.2	N 38 44.9		
	19	34 04.2	56 35.9	40.4	298 37.4	09.8	106 33.3	34.2	101 47.2	45.5	Zuben'ubi	137 49.5	S 15 52.7		
	20	49 06.7	71 35.8	39.2	313 40.8	09.8	121 35.1	34.2	116 49.4	45.5					
	21	64 09.2	86 35.7	.. 38.0	328 44.2	.. 09.9	136 36.9	.. 34.1	131 51.5	.. 45.5					
	22	79 11.6	101 35.6	36.8	343 47.7	09.9	151 38.8	34.0	146 53.7	45.4	Venus	24 23.1	15 13		
23	94 14.1	116 35.5	35.6	358 51.1	10.0	166 40.6	34.0	161 55.8	45.4	Mars	263 51.2	23 10			
Mer. Pass. 16 48-0		v -0.1	d 1.2		v 3.4	d 0.1	v 1.8	d 0.1	v 2.1	d 0.0	Jupiter	72 55.9	11 58		
											Saturn	67 56.5	12 17		

G.M.T.		SUN		MOON				Lat.	Twilight		Sun-rise	Moonrise							
		G.H.A.	Dec.	G.H.A.	<i>v</i>	Dec.	<i>d</i>		H.P.	Naut.		Civil	7	8	9	10			
d	h	°	'	°	'	°	'	°	'	h	m	h	m	h	m	h	m	h	m
SATURDAY	7	00	178 28.3	S 22 25.7	303 41.6	14.4	N	7	44.5	8.9	54.6	N 72	08 15	10 20	21 29	23 07	24 48	00 48	
	01	01	193 28.0	25.4	318 15.0	14.5		7	35.6	8.9	54.6	N 70	07 58	09 37	21 35	23 07	24 42	00 42	
	02	02	208 27.7	25.1	332 48.5	14.4		7	26.7	9.0	54.6	68	07 44	09 08	11 10	21 41	23 08	24 37	00 37
	03	03	223 27.5	24.8	347 21.9	14.5		7	17.7	9.0	54.7	66	07 33	08 46	10 13	21 45	23 08	24 33	00 33
	04	04	238 27.2	24.4	1 55.4	14.5		7	08.7	9.1	54.7	64	07 23	08 29	09 40	21 48	23 08	24 30	00 30
	05	05	253 26.9	24.1	16 28.9	14.5		6	59.6	9.1	54.7	62	07 14	08 14	09 16	21 52	23 08	24 27	00 27
	06	06	268 26.7	S 22 23.8	31 02.4	14.5	N	6	50.5	9.1	54.7	60	07 07	08 02	08 57	21 54	23 08	24 24	00 24
	07	07	283 26.4	23.5	45 35.9	14.4		6	41.4	9.1	54.7	N 58	07 00	07 51	08 41	21 57	23 08	24 22	00 22
	08	08	298 26.1	23.2	60 09.3	14.5		6	32.3	9.2	54.7	56	06 54	07 42	08 28	21 59	23 08	24 20	00 20
	09	09	313 25.9	22.9	74 42.8	14.5		6	23.1	9.2	54.8	54	06 48	07 34	08 16	22 01	23 08	24 18	00 18
	10	10	328 25.6	22.5	89 16.3	14.5		6	13.9	9.3	54.8	52	06 43	07 26	08 06	22 02	23 08	24 16	00 16
	11	11	343 25.3	22.2	103 49.8	14.5		6	04.6	9.2	54.8	50	06 38	07 19	07 57	22 04	23 08	24 15	00 15
	12	12	358 25.0	S 22 21.9	118 23.3	14.4	N	5	55.4	9.4	54.8	45	06 28	07 04	07 38	22 07	23 09	24 11	00 11
	13	13	13 24.8	21.6	132 56.7	14.5		5	46.0	9.3	54.8	N 40	06 18	06 52	07 22	22 10	23 09	24 09	00 09
	14	14	28 24.5	21.3	147 30.2	14.5		5	36.7	9.4	54.9	35	06 09	06 41	07 08	22 13	23 09	24 06	00 06
	15	15	43 24.2	20.9	162 03.7	14.5		5	27.3	9.4	54.9	30	06 01	06 31	06 57	22 15	23 09	24 04	00 04
	16	16	58 24.0	20.6	176 37.2	14.4		5	17.9	9.4	54.9	20	05 46	06 13	06 37	22 19	23 09	24 01	00 01
	17	17	73 23.7	20.3	191 10.6	14.5		5	08.5	9.4	54.9	N 10	05 31	05 57	06 19	22 22	23 09	23 58	24 48
	18	18	88 23.4	S 22 20.0	205 44.1	14.4	N	4	59.1	9.5	54.9	0	05 15	05 41	06 03	22 25	23 09	23 55	24 42
	19	19	103 23.2	19.6	220 17.5	14.5		4	49.6	9.5	55.0	S 10	04 57	05 24	05 46	22 28	23 10	23 52	24 36
	20	20	118 22.9	19.3	234 51.0	14.4		4	40.1	9.6	55.0	20	04 35	05 04	05 28	22 32	23 10	23 49	24 30
	21	21	133 22.6	19.0	249 24.4	14.4		4	30.5	9.5	55.0	30	04 08	04 40	05 08	22 36	23 10	23 45	24 23
	22	22	148 22.4	18.7	263 57.8	14.4		4	21.0	9.6	55.0	35	03 50	04 26	04 55	22 38	23 10	23 44	24 19
	23	23	163 22.1	18.3	278 31.2	14.5		4	11.4	9.6	55.1	40	03 28	04 09	04 41	22 40	23 10	23 41	24 14
	8	00	178 21.8	S 22 18.0	293 04.7	14.4	N	4	01.8	9.7	55.1	45	03 00	03 48	04 24	22 43	23 10	23 39	24 09
01	01	193 21.6	17.7	307 38.1	14.3		3	52.1	9.6	55.1	S 50	02 19	03 20	04 03	22 46	23 11	23 36	24 03	
02	02	208 21.3	17.4	322 11.4	14.4		3	42.5	9.7	55.1	52	01 55	03 06	03 53	22 48	23 11	23 34	24 00	
03	03	223 21.0	17.0	336 44.8	14.4		3	32.8	9.7	55.1	54	01 22	02 50	03 42	22 50	23 11	23 33	23 57	
04	04	238 20.8	16.7	351 18.2	14.3		3	23.1	9.7	55.2	56	////	02 30	03 29	22 51	23 11	23 31	23 54	
05	05	253 20.5	16.4	5 51.5	14.4		3	13.4	9.8	55.2	58	////	02 05	03 13	22 53	23 11	23 29	23 50	
06	06	268 20.2	S 22 16.0	20 24.9	14.3	N	3	03.6	9.7	55.2	S 60	////	01 28	02 55	22 56	23 11	23 27	23 45	
07	07	283 20.0	15.7	34 58.2	14.3		2	53.9	9.8	55.2									
08	08	298 19.7	15.4	49 31.5	14.3		2	44.1	9.8	55.3									
09	09	313 19.4	15.0	64 04.8	14.3		2	34.3	9.9	55.3	Lat.	Sun-set	Twilight		Moonset				
10	10	328 19.2	14.7	78 38.1	14.2		2	24.4	9.8	55.3			Civil	Naut.	7	8	9	10	
11	11	343 18.9	14.3	93 11.3	14.3		2	14.6	9.9	55.3									
12	12	358 18.6	S 22 14.0	107 44.6	14.2	N	2	04.7	9.9	55.4									
13	13	13 18.4	13.7	122 17.8	14.2		1	54.8	9.9	55.4	N 72	13 54	15 59	11 20	11 13	11 07	11 01		
14	14	28 18.1	13.3	136 51.0	14.2		1	44.9	9.9	55.4	N 70	13 04	15 06	16 30	11 11	11 11	11 10	11 09	
15	15	43 17.9	13.0	151 24.2	14.1		1	35.0	9.9	55.4	68	14 01	15 28	16 41	11 05	11 08	11 12	11 16	
16	16	58 17.6	12.6	165 57.3	14.2		1	25.1	9.9	55.5	66	14 01	15 28	16 41	10 59	11 06	11 13	11 21	
17	17	73 17.3	12.3	180 30.5	14.1		1	15.2	10.0	55.5	64	14 34	15 45	16 51	10 54	11 05	11 15	11 26	
18	18	88 17.1	S 22 12.0	195 03.6	14.1	N	1	05.2	10.0	55.5	62	14 58	16 00	17 00	10 50	11 03	11 16	11 30	
19	19	103 16.8	11.6	209 36.7	14.0		0	55.2	10.0	55.5	60	15 17	16 12	17 07	10 46	11 02	11 17	11 34	
20	20	118 16.5	11.3	224 09.7	14.1		0	45.2	10.0	55.6	N 58	15 32	16 22	17 14	10 43	11 01	11 18	11 37	
21	21	133 16.3	10.9	238 42.8	14.0		0	35.2	10.0	55.6	56	15 46	16 32	17 20	10 40	11 00	11 19	11 40	
22	22	148 16.0	10.6	253 15.8	14.0		0	25.2	10.0	55.6	54	15 57	16 40	17 25	10 37	10 59	11 20	11 43	
23	23	163 15.8	10.2	267 48.8	13.9		0	15.2	10.0	55.7	52	16 08	16 48	17 31	10 35	10 58	11 21	11 45	
9	00	178 15.5	S 22 09.9	282 21.7	14.0	N	0	05.2	10.1	55.7	50	16 17	16 54	17 35	10 33	10 57	11 22	11 48	
01	01	193 15.2	09.5	296 54.7	13.8	S	0	04.9	10.0	55.7	45	16 36	17 09	17 46	10 28	10 56	11 23	11 52	
02	02	208 15.0	09.2	311 27.5	13.9		0	14.9	10.1	55.7	N 40	16 52	17 22	17 55	10 24	10 54	11 24	11 55	
03	03	223 14.7	08.8	326 00.4	13.9		0	25.0	10.1	55.8	35	17 05	17 33	18 04	10 20	10 53	11 26	12 00	
04	04	238 14.4	08.5	340 33.3	13.8		0	35.1	10.0	55.8	30	17 17	17 43	18 12	10 17	10 52	11 27	12 03	
05	05	253 14.2	08.1	355 06.1	13.7		0	45.1	10.1	55.8	20	17 36	18 00	18 28	10 12	10 50	11 28	12 08	
06	06	268 13.9	S 22 07.8	9 38.8	13.8	S	0	55.2	10.1	55.9	N 10	17 54	18 17	18 43	10 07	10 48	11 30	12 13	
07	07	283 13.7	07.4	24 11.6	13.7		0	45.7	10.1	56.0	0	18 10	18 33	18 59	10 03	10 46	11 31	12 17	
08	08	298 13.4	07.1	38 44.3	13.7		0	35.1	10.1	56.0	S 10	18 27	18 50	19 17	09 58	10 45	11 32	12 22	
09	09	313 13.2	06.7	53 17.0	13.6		0	25.5	10.1	55.9	20	18 45	19 09	19 38	09 53	10 43	11 34	12 26	
10	10	328 12.9	06.4	67 49.6	13.6		0	15.6	10.1	56.0	30	19 06	19 33	20 05	09 47	10 41	11 35	12 32	
11	11	343 12.6	06.0	82 22.2	13.5		0	5.7	10.1	56.0	35	19 18	19 47	20 23	09 44	10 40	11 36	12 35	
12	12	358 12.4	S 22 05.7	96 54.7	13.6	S	1	55.8	10.2	56.0	40	19 32	20 04	20 45	09 41	10 38	11 37	12 38	
13	13	13 12.1	05.3	111 27.3	13.4		1	46.4	10.1	56.1	45	19 49	20 25	21 13	09 36	10 37	11 38	12 42	
14	14	28 11.9	05.0	125 59.7	13.5		1	36.7	10.1	56.1	S 50	20 10	20 53	21 53	09 31	10 35	11 40	12 47	
15	15	43 11.6	04.6	140 32.2	13.4		1	26.2	10.1	56.1	52	20 20	21 06	22 17	09 29	10 34	11 41	12 49	
16	16	58 11.3	04.2	155 04.6	13.3		1	16.1	10.1	56.1	54	20 31	21 22	22 49	09 26	10 33	11 41	12 52	
17	17	73 11.1	03.9	169 36.9	13.4		1	6.4	10.1	56.2	56	20 44	21 42	///	09 23	10 32	11 42	12 55	
18	18	88 10.8	S 22 03.5	184 09.3	13.2	S	2	56.5	10.2	56.2	58	20 59	22 07	///	09 20	10 31	11 43	12 58	
19	19	103 10.6	03.2	198 41.5	13.3		3	06.7	10.1	56.5									



	ARIES			VENUS -3.9			MARS -1.1			JUPITER -1.4			SATURN +0.7			STARS		
G.M.T.	G.H.A.			G.H.A.			G.H.A.			G.H.A.			G.H.A.			Name	S.H.A.	Dec.
d h	m	s	Dec.	m	s	Dec.	m	s	Dec.	m	s	Dec.	m	s	Dec.			
TUESDAY	10 00	109 16.6	131 35.3	S 10 34.5	13 54.5	N 27 10.0	181 42.4	S 22 33.9	176 58.0	S 21 45.3	Acamar	315 48.2	S 40 28.0					
	01	124 19.0	146 35.2	33.3	28 57.9	10.1	196 44.3	33.8	192 00.1	45.3	Achernar	335 56.2	S 57 26.4					
	02	139 21.5	161 35.1	32.1	44 01.3	10.1	211 46.1	33.8	207 02.3	45.2	Acruz	173 53.3	S 62 52.7					
	03	154 24.0	176 35.0	.. 30.9	59 04.7	.. 10.1	226 48.0	.. 33.7	222 04.4	.. 45.2	Adhara	255 43.3	S 28 55.3					
	04	169 26.4	191 34.9	29.7	74 08.1	10.2	241 49.8	33.6	237 06.6	45.2	Aldebaran	291 34.6	N 16 25.8					
	05	184 28.9	206 34.8	28.6	89 11.5	10.2	256 51.6	33.6	252 08.7	45.1								
	06	199 31.3	221 34.7	S 10 27.4	104 15.0	N 27 10.3	271 53.5	S 22 33.5	267 10.9	S 21 45.1	Alioth	166 55.4	N 56 10.0					
	07	214 33.8	236 34.6	26.2	119 18.4	10.3	286 55.3	33.4	282 13.0	45.0	Alkaid	153 30.2	N 49 30.2					
	08	229 36.3	251 34.5	25.0	134 21.8	10.4	301 57.2	33.4	297 15.2	45.0	Al Na'ir	28 33.8	S 47 09.2					
	09	244 38.7	266 34.4	.. 23.8	149 25.2	.. 10.4	316 59.0	.. 33.3	312 17.3	.. 45.0	Alnilam	276 26.3	S 1 13.7					
	10	259 41.2	281 34.3	22.6	164 28.6	10.4	332 00.8	33.3	327 19.5	44.9	Alphard	218 34.7	S 8 29.4					
	11	274 43.7	296 34.2	21.5	179 32.0	10.5	347 02.7	33.2	342 21.6	44.9								
	12	289 46.1	311 34.1	S 10 20.3	194 35.4	N 27 10.5	2	04.5	S 22 33.1	357 23.8	S 21 44.8	Alphecca	126 44.8	N 26 50.6				
	13	304 48.6	326 34.0	19.1	209 38.8	10.6	17	06.3	33.1	12 25.9	44.8	Alpheratz	358 24.6	N 28 52.6				
	14	319 51.1	341 33.9	17.9	224 42.2	10.6	32	08.2	33.0	27 28.0	44.7	Altair	62 47.2	N 8 45.9				
	15	334 53.5	356 33.8	.. 16.7	239 45.6	.. 10.6	47	10.0	.. 32.9	42 30.2	.. 44.7	Ankaa	353 54.9	S 42 31.3				
	16	349 56.0	11 33.7	15.5	254 49.0	10.7	62	11.9	32.9	57 32.3	44.7	Antares	113 15.1	S 26 20.6				
	17	4 58.4	26 33.6	14.4	269 52.4	10.7	77	13.7	32.8	72 34.5	44.6							
	18	20 00.9	41 33.5	S 10 13.2	284 55.8	N 27 10.7	92	15.5	S 22 32.7	87 36.6	S 21 44.6	Arcturus	146 32.0	N 19 23.0				
	19	35 03.4	56 33.4	12.0	299 59.2	10.8	107	17.4	32.7	102 38.8	44.5	Atria	108 53.0	S 68 57.2				
	20	50 05.8	71 33.3	10.8	315 02.6	10.8	122	19.2	32.6	117 40.9	44.5	Avior	234 33.5	S 59 23.0				
	21	65 08.3	86 33.2	.. 09.6	330 06.0	.. 10.9	137	21.0	.. 32.5	132 43.1	.. 44.5	Bellatrix	279 14.2	N 6 18.8				
	22	80 10.8	101 33.2	08.4	345 09.4	10.9	152	22.9	32.5	147 45.2	44.4	Betelgeuse	271 43.9	N 7 23.9				
	23	95 13.2	116 33.1	07.2	0 12.8	10.9	167	24.7	32.4	162 47.4	44.4							
WEDNESDAY	11 00	110 15.7	131 33.0	S 10 06.0	15 16.2	N 27 11.0	182 26.6	S 22 32.3	177 49.5	S 21 44.3	Canopus	264 13.2	S 52 40.7					
	01	125 18.2	146 32.9	04.9	30 19.5	11.0	197 28.4	32.3	192 51.7	44.3	Capella	281 32.6	N 45 57.6					
	02	140 20.6	161 32.8	03.7	45 22.9	11.0	212 30.2	32.2	207 53.8	44.2	Deneb	49 58.9	N 45 08.5					
	03	155 23.1	176 32.7	.. 02.5	60 26.3	.. 11.1	227 32.1	.. 32.1	222 56.0	.. 44.2	Denebola	183 13.9	N 14 47.3					
	04	170 25.6	191 32.6	01.3	75 29.7	11.1	242 33.9	32.1	237 58.1	44.2	Diphda	349 35.7	S 18 12.2					
	05	185 28.0	206 32.5	10 00.1	90 33.1	11.1	257 35.7	32.0	253 00.3	44.1								
	06	200 30.5	221 32.4	S 9 58.9	105 36.5	N 27 11.2	272 37.6	S 22 31.9	268 02.4	S 21 44.1	Dubhe	194 39.9	N 61 57.4					
	07	215 32.9	236 32.4	57.7	120 39.9	11.2	287 39.4	31.9	283 04.6	44.0	Elmath	279 02.4	N 28 34.5					
	08	230 35.4	251 32.3	56.5	135 43.2	11.2	302 41.3	31.8	298 06.7	44.0	Eltanin	91 05.1	N 51 29.6					
	09	245 37.9	266 32.2	.. 55.3	150 46.6	.. 11.3	317 43.1	.. 31.7	313 08.9	.. 44.0	Enif	34 26.3	N 9 41.8					
	10	260 40.3	281 32.1	54.1	165 50.0	11.3	332 44.9	31.7	328 11.0	43.9	Fomalhaut	16 07.9	S 29 49.9					
	11	275 42.8	296 32.0	53.0	180 53.4	11.3	347 46.8	31.6	343 13.2	43.9								
	12	290 45.3	311 31.9	S 9 51.8	195 56.7	N 27 11.4	2	48.6	S 22 31.5	358 15.3	S 21 43.8	Gacrux	172 44.9	S 56 53.4				
	13	305 47.7	326 31.9	50.6	211 00.1	11.4	17	50.5	31.5	13 17.5	43.8	Gienah	176 33.0	S 17 19.4				
	14	320 50.2	341 31.8	49.4	226 03.5	11.4	32	52.3	31.4	28 19.6	43.7	Hadar	149 44.2	S 60 10.8				
	15	335 52.7	356 31.7	.. 48.2	241 06.9	.. 11.5	47	54.1	.. 31.3	43 21.8	.. 43.7	Hamal	328 45.4	N 23 16.7				
	16	350 55.1	11 31.6	47.0	256 10.2	11.5	62	56.0	31.2	58 23.9	43.7	Kaus Aust.	84 36.7	S 34 24.1				
	17	5 57.6	26 31.6	45.8	271 13.6	11.5	77	57.8	31.2	73 26.1	43.6							
	18	21 00.0	41 31.5	S 9 44.6	286 17.0	N 27 11.6	92	59.7	S 22 31.1	88 28.2	S 21 43.6	Kochab	137 18.9	N 74 18.7				
	19	36 02.5	56 31.4	43.4	301 20.4	11.6	108	01.5	31.0	103 30.4	43.5	Markab	14 18.0	N 14 59.7				
	20	51 05.0	71 31.3	42.2	316 23.7	11.6	123	03.3	31.0	118 32.5	43.5	Menkar	314 56.3	N 3 56.1				
	21	66 07.4	86 31.2	.. 41.0	331 27.1	.. 11.7	138	05.2	.. 30.9	133 34.7	.. 43.4	Menkent	148 54.4	S 36 10.5				
	22	81 09.9	101 31.2	39.8	346 30.5	11.7	153	07.0	30.8	148 36.8	43.4	Miaplacidus	221 47.1	S 69 33.3				
	23	96 12.4	116 31.1	38.6	1 33.8	11.7	168	08.9	30.8	163 39.0	43.4							
THURSDAY	12 00	111 14.8	131 31.0	S 9 37.4	16 37.2	N 27 11.8	183 10.7	S 22 30.7	178 41.1	S 21 43.3	Mirfak	309 36.8	N 49 43.5					
	01	126 17.3	146 31.0	36.2	31 40.5	11.8	198 12.5	30.6	193 43.2	43.3	Nunki	76 47.8	S 26 20.7					
	02	141 19.8	161 30.9	35.0	46 43.9	11.8	213 14.4	30.6	208 45.4	43.2	Peacock	54 22.2	S 56 51.7					
	03	156 22.2	176 30.8	.. 33.9	61 47.3	.. 11.8	228 16.2	.. 30.5	223 47.5	.. 43.2	Pollux	244 15.8	N 28 07.1					
	04	171 24.7	191 30.7	32.7	76 50.6	11.9	243 18.0	30.4	238 49.7	43.1	Procyon	245 40.8	N 5 19.4					
	05	186 27.2	206 30.7	31.5	91 54.0	11.9	258 19.9	30.4	253 51.8	43.1								
	06	201 29.6	221 30.6	S 9 30.3	106 57.3	N 27 11.9	273 21.7	S 22 30.3	268 54.0	S 21 43.1	Rasalhague	96 43.5	N 12 35.3					
	07	216 32.1	236 30.5	29.1	122 00.7	12.0	288 23.6	30.2	283 56.1	43.0	Regulus	208 25.4	N 12 09.4					
	08	231 34.5	251 30.5	27.9	137 04.0	12.0	303 25.4	30.2	298 58.3	43.0	Rigel	281 49.8	S 8 14.9					
	09	246 37.0	266 30.4	.. 26.7	152 07.4	.. 12.0	318 27.2	.. 30.1	314 00.4	.. 42.9	Rigel Kent.	140 46.0	S 60 40.1					
	10	261 39.5	281 30.3	25.5	167 10.7	12.0	333 29.1	30.0	329 02.6	42.9	Sabik	102 58.3	S 15 40.5					
	11	276 41.9	296 30.3	24.3	182 14.1	12.1	348 30.9	30.0	344 04.7	42.9								
	12	291 44.4	311 30.2	S 9 23.1	197 17.4	N 27 12.1	3	32.8	S 22 29.9	359 06.9	S 21 42.8	Schedar	350 25.7	N 56 19.6				
	13	306 46.9	326 30.1	21.9	212 20.8	12.1	18	34.6	29.8	14 09.0	42.8	Shaula	97 16.1	S 37 04.4				
	14	321 49.3	341 30.1	20.7	227 24.1	12.2	33	36.4	29.8	29 11.2	42.7	Sirius	259 08.3	S 16 39.9				
	15	336 51.8	356 30.0	.. 19.5	242 27.5	.. 12.2	48	38.3	.. 29.7	44 13.3	.. 42.7	Spica	159 13.0	S 10 57.4				
	16	351 54.3	11 30.0	18.3	257 30.8	12.2	63	40.1	29.6	59 15.5	42.6	Suhail	223 21.1	S 43 16.5				
	17	6 56.7	26 29.9	17.1	272 34.2	12.2	78	42.0	29.6	74 17.6	42.6							
	18	21 59.2	41 29.8	S 9 15.9	287 37.5	N 27 12.3	93	43.8	S 22 29.5	89 19.8	S 21 42.6	Vega	81 06.2	N 38 44.8				
	19	37 01.7	56 29.8	14.7	302 40.9	12.3	108	45.6	29.4	104 21.9	42.5	Zuben'ubi	137 49.4	S 15 52.7				
	20	52 04.1	71 29.7	13.5	317 44.2	12.3	123	47.5	29.3	119 24.1	42.5							
	21	67 06.6	86 29.7	.. 12.3	332 47.5	.. 12.3	138	49.3	.. 29.3	134 26.2	.. 42.4							
	22	82 09.0	101 29.6	11.0	347 50.9	12.3	153	51.1	29.2	149 28.4	42.4	Venus	21 17.3	15 14				
	23	97 11.5	116 29.6	09.8	2 54.2	12.4	168	53.0	29.1	164 30.5	42.3	Mars	265 00.5	22 54				
											Jupiter	72 10.9	11 49					
											Saturn	67 33.8	12 07					
Mer. Pass.	16 36.2	v	-0.1	d	1.2	v	3.4	d	0.0	v								

G.M.T.		SUN		MOON				Lat.	Twilight		Sun-rise	Moonrise							
		G.H.A.	Dec.	G.H.A.	φ	Dec.	d		H.P.	Naut.		Civil	10	11	12	13			
d	h	°	'	°	'	°	'	°	'	°	'	h	m	h	m	h	m	h	m
TUESDAY	00	178 09.3	S 22 01.3	271 22.2	13.0	S 3 57.2	10.1	56.4	N 72	08 10	10 08	00 48	02 34	04 29	06 36				
	01	193 09.0	01.0	285 54.2	12.9	4 07.3	10.0	56.5	N 70	07 54	09 29	00 42	02 21	04 05	05 55				
	02	208 08.8	00.6	300 26.1	12.9	4 17.3	10.1	56.5	68	07 40	09 02	10 54	00 37	02 10	03 48	05 28			
	03	223 08.5	22 00.2	314 58.0	12.9	4 27.4	10.1	56.5	66	07 29	08 42	10 05	00 33	02 02	03 33	05 07			
	04	238 08.3	21 59.9	329 29.9	12.8	4 37.5	10.0	56.6	64	07 20	08 25	09 35	00 30	01 54	03 22	04 50			
	05	253 08.0	59.5	344 01.7	12.7	4 47.5	10.1	56.6	62	07 12	08 11	09 12	00 27	01 48	03 12	04 37			
	06	268 07.8	S 21 59.1	358 33.4	12.7	4 57.6	10.0	56.6	60	07 05	07 59	08 54	00 24	01 42	03 03	04 25			
	07	283 07.5	58.8	13 05.1	12.6	5 07.6	10.0	56.7	N 58	06 58	07 49	08 38	00 22	01 38	02 56	04 15			
	08	298 07.3	58.4	27 36.7	12.6	5 17.6	10.0	56.7	56	06 52	07 40	08 26	00 20	01 33	02 49	04 07			
	09	313 07.0	58.0	42 08.3	12.5	5 27.6	10.0	56.7	54	06 47	07 32	08 14	00 18	01 30	02 44	03 55			
WEDNESDAY	10	328 06.7	57.7	56 39.8	12.5	5 37.6	10.0	56.8	52	06 42	07 25	08 04	00 16	01 26	02 38	03 52			
	11	343 06.5	57.3	71 11.3	12.4	5 47.6	9.9	56.8	50	06 37	07 18	07 55	00 15	01 23	02 34	03 46			
	12	358 06.2	S 21 56.9	85 42.7	12.3	5 57.5	10.0	56.8	45	06 27	07 04	07 37	00 11	01 16	02 23	03 32			
	13	13 06.0	56.5	100 14.0	12.3	6 07.5	9.9	56.9	N 40	06 18	06 51	07 21	00 09	01 11	02 15	03 21			
	14	28 05.7	56.2	114 45.3	12.2	6 17.4	9.9	56.9	35	06 09	06 41	07 08	00 06	01 06	02 08	03 12			
	15	43 05.5	55.8	129 16.5	12.2	6 27.3	9.9	57.0	30	06 02	06 31	06 57	00 04	01 02	02 02	03 04			
	16	58 05.2	55.4	143 47.7	12.1	6 37.2	9.9	57.0	20	05 47	06 14	06 37	00 01	00 55	01 51	02 50			
	17	73 05.0	55.0	158 18.8	12.0	6 47.1	9.8	57.0	N 10	05 32	05 58	06 20	24 48	00 48	01 41	02 38			
	18	88 04.7	S 21 54.6	172 49.8	12.0	6 56.9	9.9	57.1	0	05 16	05 42	06 04	24 42	00 42	01 33	02 26			
	19	103 04.5	54.3	187 20.8	11.9	7 06.8	9.8	57.1	S 10	04 58	05 25	05 48	24 36	00 36	01 24	02 15			
THURSDAY	20	118 04.2	53.9	201 51.7	11.8	7 16.6	9.7	57.1	20	04 37	05 06	05 30	24 30	00 30	01 14	02 03			
	21	133 04.0	53.5	216 22.5	11.8	7 26.3	9.8	57.2	30	04 10	04 43	05 10	24 23	00 23	01 04	01 49			
	22	148 03.7	53.1	230 53.3	11.7	7 36.1	9.7	57.2	35	03 53	04 29	04 58	24 19	00 19	00 58	01 42			
	23	163 03.5	52.7	245 24.0	11.7	7 45.8	9.7	57.3	40	03 32	04 12	04 44	24 14	00 14	00 51	01 33			
	00	178 03.2	S 21 52.4	259 54.7	11.6	S 7 55.5	9.7	57.3	45	03 04	03 51	04 28	24 09	00 09	00 43	01 22			
	01	193 03.0	52.0	274 25.3	11.5	8 05.2	9.7	57.3	S 50	02 25	03 25	04 07	24 03	00 03	00 33	01 10			
	02	208 02.7	51.6	288 55.8	11.4	8 14.9	9.6	57.4	52	02 02	03 11	03 57	24 00	00 00	00 29	01 04			
	03	223 02.5	51.2	303 26.2	11.4	8 24.5	9.6	57.4	54	01 32	02 56	03 46	23 57	24 24	00 24	00 57			
	04	238 02.2	50.8	317 56.6	11.3	8 34.1	9.6	57.4	56	00 29	02 37	03 34	23 54	24 19	00 19	00 50			
	05	253 02.0	50.4	332 26.9	11.2	8 43.7	9.5	57.5	58	////	02 13	03 19	23 50	24 13	00 13	00 42			
FRIDAY	06	268 01.7	S 21 50.0	346 57.1	11.1	S 8 53.2	9.5	57.5	S 60	////	01 40	03 02	23 45	24 06	00 06	00 33			
	07	283 01.5	49.7	1 27.2	11.1	9 02.7	9.5	57.6	Lat.	Sun-set	Twilight		Moonset						
	08	298 01.2	49.3	15 57.3	11.0	9 12.2	9.4	57.6			Civil	Naut.	10	11	12	13			
	09	313 01.0	48.9	30 27.3	11.0	9 21.6	9.4	57.6											
	10	328 00.7	48.5	44 57.3	10.8	9 31.0	9.3	57.7											
	11	343 00.5	48.1	59 27.1	10.8	9 40.3	9.3	57.7											
	12	358 00.2	S 21 47.7	73 56.9	10.7	S 9 49.6	9.3	57.8	N 72	14 08	16 07	11 01	10 54	10 45	10 31				
	13	13 00.0	47.3	88 26.6	10.6	9 58.9	9.3	57.8	N 70	13 23	15 14	16 36	11 16	11 21	11 28	11 41			
	14	27 59.7	46.9	102 56.2	10.5	10 08.2	9.2	57.8	68	14 11	15 35	16 47	11 21	11 31	11 44	12 03			
	15	42 59.5	46.5	117 25.7	10.5	10 17.4	9.1	57.9	66	14 42	15 51	16 56	11 26	11 39	11 56	12 20			
SATURDAY	16	57 59.3	46.1	131 55.2	10.4	10 26.5	9.1	57.9	64	15 05	16 05	17 05	11 30	11 47	12 07	12 34			
	17	72 59.0	45.7	146 24.6	10.3	10 35.6	9.1	58.0	62	15 23	16 17	17 12	11 34	11 53	12 16	12 47			
	18	87 58.8	S 21 45.3	160 53.9	10.2	S 10 44.7	9.0	58.0	N 58	15 38	16 27	17 18	11 37	11 59	12 24	12 57			
	19	102 58.5	45.0	175 23.1	10.2	10 53.7	9.0	58.0	56	15 51	16 36	17 24	11 40	12 04	12 31	13 06			
	20	117 58.3	44.6	189 52.3	10.0	11 02.7	8.9	58.1	54	16 02	16 44	17 29	11 43	12 08	12 38	13 14			
	21	132 58.0	44.2	204 21.3	10.0	11 11.6	8.9	58.1	52	16 12	16 51	17 34	11 45	12 12	12 44	13 21			
	22	147 57.8	43.8	218 50.3	9.9	11 20.5	8.8	58.2	50	16 21	16 58	17 39	11 48	12 16	12 49	13 28			
	23	162 57.5	43.4	233 19.2	9.8	11 29.3	8.8	58.2	45	16 39	17 12	17 49	11 52	12 24	13 00	13 42			
	00	177 57.3	S 21 43.0	247 48.0	9.8	S 11 38.1	8.7	58.2	N 40	16 55	17 25	17 58	11 56	12 31	13 09	13 54			
	01	192 57.0	42.6	262 16.8	9.6	11 46.8	8.7	58.3	35	17 08	17 35	18 07	12 00	12 37	13 18	14 04			
02	207 56.8	42.2	276 45.4	9.6	11 55.5	8.6	58.3	30	17 19	17 45	18 14	12 03	12 42	13 24	14 13				
03	222 56.6	41.8	291 14.0	9.4	12 04.1	8.6	58.4	20	17 38	18 02	18 29	12 08	12 51	13 37	14 28				
04	237 56.3	41.3	305 42.4	9.4	12 12.7	8.5	58.4	N 10	17 55	18 18	18 44	12 13	12 59	13 48	14 41				
05	252 56.1	40.9	320 10.8	9.3	12 21.2	8.4	58.4	0	18 12	18 34	19 00	12 17	13 06	13 58	14 54				
SUNDAY	06	267 55.8	S 21 40.5	334 39.1	9.3	S 12 29.6	8.4	58.5	S 10	18 28	18 51	19 17	12 22	13 13	14 08	15 06			
	07	282 55.6	40.1	349 07.4	9.1	12 38.0	8.3	58.5	20	18 46	19 09	19 38	12 26	13 21	14 19	15 19			
	08	297 55.3	39.7	3 35.5	9.0	12 46.3	8.3	58.6	30	19 06	19 32	20 05	12 32	13 30	14 31	15 35			
	09	312 55.1	39.3	18 03.5	9.0	12 54.6	8.2	58.6	35	19 17	19 46	20 22	12 35	13 35	14 38	15 43			
	10	327 54.9	38.9	32 31.5	8.9	13 02.8	8.1	58.6	40	19 31	20 03	20 43	12 38	13 41	14 46	15 53			
	11	342 54.6	38.5	46 59.4	8.7	13 10.9	8.1	58.7	45	19 48	20 24	21 11	12 42	13 48	14 56	16 05			
	12	357 54.4	S 21 38.1	61 27.1	8.7	S 13 19.0	8.0	58.7	S 50	20 08	20 50	21 50	12 47	13 56	15 08	16 19			
	13	12 54.1	37.7	75 54.8	8.6	13 27.0	7.9	58.8	52	20 18	21 03	22 12	12 49	14 00	15 13	16 26			
	14	27 53.9	37.3	90 22.4	8.6	13 34.9	7.9	58.8	54	20 28	21 19	22 41	12 52	14 04	15 19	16 34			
	15	42 53.7	36.9	104 50.0	8.4	13 42.8	7.8	58.8	56	20 41	21 38	23 37	12 55	14 09	15 25	16 42			
MONDAY	16	57 53.4	36.5	119 17.4	8.3	13 50.6	7.7	58.9	58	20 55	22 01	////	12 58	14 14	15 33	16 52			
	17	72 53.2	36.0	133 44.7	8.3	13 58.3	7.6	58.9	S 60										



G.M.T.		ARIES		VENUS -3.9		MARS -1.0		JUPITER -1.4		SATURN +0.7		STARS		
		G.H.A.		G.H.A.	Dec.	G.H.A.	Dec.	G.H.A.	Dec.	G.H.A.	Dec.	Name	S.H.A.	Dec.
FRI DAY	d h													
	m													
	13 00	112 14.0	131 29.5 S 9 08.6	17 57.5 N27 12.4	183 54.8 S22 29.1	179 32.7 S21 42.3	Acamar	315 48.2	S 40 28.0					
	01	127 16.4	146 29.4 07.4	33 00.9 12.4	198 56.7 29.0	194 34.8 42.3	Achernar	335 56.3	S 57 26.4					
	02	142 18.9	161 29.4 06.2	48 04.2 12.4	213 58.5 28.9	209 37.0 42.2	Acrux	173 53.3	S 62 52.7					
	03	157 21.4	176 29.3 05.0	63 07.5 12.5	229 00.3 28.9	224 39.1 42.2	Adhara	255 43.3	S 28 55.3					
	04	172 23.8	191 29.3 03.8	78 10.9 12.5	244 02.2 28.8	239 41.3 42.1	Aldebaran	291 34.6	N 16 25.8					
	05	187 26.3	206 29.2 02.6	93 14.2 12.5	259 04.0 28.7	254 43.4 42.1								
	06	202 28.8	221 29.2 S 9 01.4	108 17.5 N27 12.5	274 05.9 S22 28.7	269 45.6 S21 42.0	Alioth	166 55.4	N 56 10.0					
	07	217 31.2	236 29.1 9 00.2	123 20.9 12.5	289 07.7 28.6	284 47.7 42.0	Alkaid	153 30.2	N 49 30.2					
	08	232 33.7	251 29.1 8 59.0	138 24.2 12.6	304 09.5 28.5	299 49.9 42.0	Al Na'ir	28 33.8	S 47 09.2					
	09	247 36.2	266 29.0 8 57.8	153 27.5 12.6	319 11.4 28.5	314 52.0 41.9	Alnilam	276 26.3	S 1 13.7					
	10	262 38.6	281 29.0 8 56.6	168 30.8 12.6	334 13.2 28.4	329 54.2 41.9	Alphard	218 34.7	S 8 29.4					
	11	277 41.1	296 28.9 8 55.4	183 34.1 12.6	349 15.1 28.3	344 56.3 41.8								
	12	292 43.5	311 28.9 S 8 54.2	198 37.5 N27 12.7	4 16.9 S22 28.2	359 58.4 S21 41.8	Alphecca	126 44.8	N 26 50.6					
	13	307 46.0	326 28.8 53.0	213 40.8 12.7	19 18.7 28.2	15 00.6 41.7	Alpheratz	358 24.6	N 28 52.6					
	14	322 48.5	341 28.8 51.8	228 44.1 12.7	34 20.6 28.1	30 02.7 41.7	Altair	62 47.2	N 8 45.9					
	15	337 50.9	356 28.8 50.6	243 47.4 12.7	49 22.4 28.0	45 04.9 41.7	Ankaa	353 54.9	S 42 31.3					
	16	352 53.4	11 28.7 49.4	258 50.7 12.7	64 24.3 28.0	60 07.0 41.6	Antares	113 15.1	S 26 20.6					
	17	7 55.9	26 28.7 48.1	273 54.1 12.7	79 26.1 27.9	75 09.2 41.6								
	18	22 58.3	41 28.6 S 8 46.9	288 57.4 N27 12.8	94 27.9 S22 27.8	90 11.3 S21 41.5	Arcturus	146 31.9	N 19 23.0					
	19	38 00.8	56 28.6 45.7	304 00.7 12.8	109 29.8 27.8	105 13.5 41.5	Atria	108 52.9	S 68 57.2					
	20	53 03.3	71 28.6 44.5	319 04.0 12.8	124 31.6 27.7	120 15.6 41.4	Avior	234 33.5	S 59 23.1					
21	68 05.7	86 28.5 43.3	334 07.3 12.8	139 33.5 27.6	135 17.8 41.4	Bellatrix	279 14.2	N 6 18.8						
22	83 08.2	101 28.5 42.1	349 10.6 12.8	154 35.3 27.6	150 19.9 41.4	Betelgeuse	271 43.9	N 7 23.9						
23	98 10.7	116 28.4 40.9	4 13.9 12.9	169 37.1 27.5	165 22.1 41.3									
SAT URDAY	14 00	113 13.1	131 28.4 S 8 39.7	19 17.2 N27 12.9	184 39.0 S22 27.4	180 24.2 S21 41.3	Canopus	264 13.2	S 52 40.7					
	01	128 15.6	146 28.4 38.5	34 20.5 12.9	199 40.8 27.3	195 26.4 41.2	Capella	281 32.6	N 45 57.6					
	02	143 18.0	161 28.3 37.3	49 23.8 12.9	214 42.7 27.3	210 28.5 41.2	Deneb	49 58.9	N 45 08.5					
	03	158 20.5	176 28.3 36.0	64 27.1 12.9	229 44.5 27.2	225 30.7 41.1	Denebola	183 13.9	N 14 47.3					
	04	173 23.0	191 28.3 34.8	79 30.4 12.9	244 46.3 27.1	240 32.8 41.1	Diphda	349 35.7	S 18 12.2					
	05	188 25.4	206 28.2 33.6	94 33.7 12.9	259 48.2 27.1	255 35.0 41.1								
	06	203 27.9	221 28.2 S 8 32.4	109 37.0 N27 13.0	274 50.0 S22 27.0	270 37.1 S21 41.0	Dubhe	194 39.9	N 61 57.4					
	07	218 30.4	236 28.2 31.2	124 40.3 13.0	289 51.9 26.9	285 39.3 41.0	Elath	279 02.4	N 28 34.5					
	08	233 32.8	251 28.1 30.0	139 43.6 13.0	304 53.7 26.9	300 41.4 40.9	Eltanin	91 05.0	N 51 29.6					
	09	248 35.3	266 28.1 28.8	154 46.9 13.0	319 55.5 26.8	315 43.6 40.9	Enif	34 26.3	N 9 41.8					
	10	263 37.8	281 28.1 27.6	169 50.2 13.0	334 57.4 26.7	330 45.7 40.8	Fomalhaut	16 07.9	S 29 49.9					
	11	278 40.2	296 28.0 26.4	184 53.5 13.0	349 59.2 26.6	345 47.9 40.8								
	12	293 42.7	311 28.0 S 8 25.1	199 56.8 N27 13.1	5 01.1 S22 26.6	0 50.0 S21 40.8	Gacrux	172 44.8	S 56 53.4					
	13	308 45.2	326 28.0 23.9	215 00.1 13.1	20 02.9 26.5	15 52.2 40.7	Gienah	176 32.9	S 17 19.5					
	14	323 47.6	341 28.0 22.7	230 03.4 13.1	35 04.7 26.4	30 54.3 40.7	Hadar	149 44.2	S 60 10.8					
	15	338 50.1	356 27.9 21.5	245 06.6 13.1	50 06.6 26.4	45 56.5 40.6	Hamal	328 45.4	N 23 16.7					
	16	353 52.5	11 27.9 20.3	260 09.9 13.1	65 08.4 26.3	60 58.6 40.6	Kaus Aust.	84 36.7	S 34 24.1					
	17	8 55.0	26 27.9 19.1	275 13.2 13.1	80 10.3 26.2	76 00.8 40.5								
	18	23 57.5	41 27.9 S 8 17.9	290 16.5 N27 13.1	95 12.1 S22 26.2	91 02.9 S21 40.5	Kochab	137 18.9	N 74 18.7					
	19	38 59.9	56 27.8 16.6	305 19.8 13.1	110 13.9 26.1	106 05.1 40.5	Markab	14 18.0	N 14 59.7					
	20	54 02.4	71 27.8 15.4	320 23.0 13.2	125 15.8 26.0	121 07.2 40.4	Menkar	314 56.4	N 3 56.1					
	21	69 04.9	86 27.8 14.2	335 26.3 13.2	140 17.6 25.9	136 09.4 40.4	Menkent	148 54.4	S 36 10.5					
	22	84 07.3	101 27.8 13.0	350 29.6 13.2	155 19.5 25.9	151 11.5 40.3	Miaplacidus	221 47.1	S 69 33.3					
23	99 09.8	116 27.7 11.8	5 32.9 13.2	170 21.3 25.8	166 13.7 40.3									
SUN DAY	15 00	114 12.3	131 27.7 S 8 10.6	20 36.2 N27 13.2	185 23.1 S22 25.7	181 15.8 S21 40.3	Mirfak	309 36.8	N 49 43.5					
	01	129 14.7	146 27.7 09.3	35 39.4 13.2	200 25.0 25.7	196 18.0 40.2	Nunki	76 47.7	S 26 20.7					
	02	144 17.2	161 27.7 08.1	50 42.7 13.2	215 26.8 25.6	211 20.1 40.2	Peacock	54 22.2	S 56 51.7					
	03	159 19.7	176 27.7 06.9	65 46.0 13.2	230 28.7 25.5	226 22.3 40.1	Pollux	244 15.7	N 28 07.1					
	04	174 22.1	191 27.6 05.7	80 49.2 13.2	245 30.5 25.4	241 24.4 40.1	Procyon	245 40.8	N 5 19.4					
	05	189 24.6	206 27.6 04.5	95 52.5 13.3	260 32.4 25.4	256 26.6 40.0								
	06	204 27.0	221 27.6 S 8 03.3	110 55.8 N27 13.3	275 34.2 S22 25.3	271 28.7 S21 40.0	Rasalhague	96 43.5	N 12 35.3					
	07	219 29.5	236 27.6 02.0	125 59.0 13.3	290 36.0 25.2	286 30.9 39.9	Regulus	208 25.4	N 12 09.4					
	08	234 32.0	251 27.6 8 00.8	141 02.3 13.3	305 37.9 25.2	301 33.0 39.9	Rigel	281 49.8	S 8 14.9					
	09	249 34.4	266 27.6 7 59.6	156 05.6 13.3	320 39.7 25.1	316 35.2 39.9	Rigel Kent.	140 46.0	S 60 40.1					
	10	264 36.9	281 27.6 58.4	171 08.8 13.3	335 41.6 25.0	331 37.3 39.8	Sabik	102 58.3	S 15 40.5					
	11	279 39.4	296 27.6 57.2	186 12.1 13.3	350 43.4 25.0	346 39.5 39.8								
	12	294 41.8	311 27.5 S 7 55.9	201 15.3 N27 13.3	5 45.2 S22 24.9	1 41.6 S21 39.7	Schedar	350 25.8	N 56 19.6					
	13	309 44.3	326 27.5 54.7	216 18.6 13.3	20 47.1 24.8	16 43.7 39.7	Shaula	97 16.1	S 37 04.4					
	14	324 46.8	341 27.5 53.5	231 21.8 13.3	35 48.9 24.7	31 45.9 39.6	Sirius	259 08.3	S 16 39.9					
	15	339 49.2	356 27.5 52.3	246 25.1 13.3	50 50.8 24.7	46 48.0 39.6	Spica	159 13.0	S 10 57.4					
	16	354 51.7	11 27.5 51.1	261 28.4 13.4	65 52.6 24.6	61 50.2 39.6	Suhail	223 21.1	S 43 16.5					
	17	9 54.1	26 27.5 49.8	276 31.6 13.4	80 54.4 24.5	76 52.3 39.5								
	18	24 56.6	41 27.5 S 7 48.6	291 34.9 N27 13.4	95 56.3 S22 24.5	91 54.5 S21 39.5	Vega	81 06.2	N 38 44.8					
	19	39 59.1	56 27.5 47.4	306 38.1 13.4	110 58.1 24.4	106 56.6 39.4	Zuben'ubi	137 49.4	S 15 52.7					
	20	55 01.5	71 27.5 46.2	321 41.4 13.4	126 00.0 24.3	121 58.8 39.4								
	21	70 04.0	86 27.5 45.0	336 44.6 13.4	141 01.8 24.2	137 00.9 39.3		S.H.A.	Mer. Pass.					
	22	85 06.5	101 27.5 43.7	351 47.8 13.4	156 03.6 24.2	152 03.1 39.3	Venus	18 15.3	15 14					
23	100 08.9	116 27.5 42.5	6 51.1 13.4	171 05.5 24.1	167 05.2 39.3	Mars	266 04.1	22 38						
Mer. Pass. 16 24.4		v 0.0 d 1.2	v 3.3 d 0.0	v 1.8 d 0.1	v 2.1 d 0.0	v 2.1 d 0.0	Jupiter	71 25.9	11 40					
							Saturn	67 11.1	11 57					

G.M.T.		SUN		MOON				Lat.	Twilight		Sun-rise	Moonrise					
		G.H.A.	Dec.	G.H.A.	<i>v</i>	Dec.	<i>d</i>		H.P.	Naut.		Civil	13	14	15	16	
d	h	°	'	°	'	°	'	°	'	°	'	°	'	°	'	°	'
F R I D A Y	13 00	177 51.5	S21 33.1	234 53.6	7.6	S14 50.2	7.1	59.2	N 72	08 03	09 56	■	06 36	■	■	■	
	01	192 51.3	32.7	249 20.2	7.5	14 57.3	7.0	59.2	N 70	07 48	09 21	■	05 55	07 46	09 19	10 05	
	02	207 51.0	32.3	263 46.7	7.5	15 04.3	7.0	59.3	68	07 36	08 56	10 39	05 28	07 05	08 27	09 20	
	03	222 50.8	.. 31.9	278 13.2	7.3	15 11.3	6.8	59.3	66	07 25	08 37	09 56	05 07	06 37	07 55	08 51	
	04	237 50.6	31.5	292 39.5	7.3	15 18.1	6.8	59.4	64	07 17	08 21	09 28	04 50	06 16	07 31	08 28	
	05	252 50.3	31.0	307 05.8	7.1	15 24.9	6.6	59.4	62	07 09	08 08	09 07	04 37	05 59	07 12	08 10	
	06	267 50.1	S21 30.6	321 31.9	7.1	S15 31.5	6.6	59.4	60	07 02	07 56	08 49	04 25	05 45	06 56	07 56	
	07	282 49.8	30.2	335 58.0	7.0	15 38.1	6.5	59.5	N 58	06 56	07 47	08 35	04 15	05 33	06 43	07 43	
	08	297 49.6	29.8	350 24.0	6.9	15 44.6	6.4	59.5	56	06 50	07 38	08 23	04 07	05 22	06 32	07 32	
	09	312 49.4	.. 29.3	4 49.9	6.8	15 51.0	6.3	59.6	54	06 45	07 30	08 12	03 59	05 13	06 22	07 22	
	10	327 49.1	28.9	19 15.7	6.8	15 57.3	6.2	59.6	52	06 40	07 23	08 02	03 52	05 05	06 13	07 14	
	11	342 48.9	28.5	33 41.5	6.6	16 03.5	6.1	59.6	50	06 36	07 17	07 54	03 46	04 57	06 05	07 06	
	12	357 48.7	S21 28.1	48 07.1	6.6	S16 09.6	6.0	59.7	45	06 26	07 02	07 35	03 32	04 41	05 48	06 49	
	13	12 48.4	27.6	62 32.7	6.4	16 15.6	6.0	59.7	N 40	06 17	06 51	07 21	03 21	04 29	05 34	06 36	
	14	27 48.2	27.2	76 58.1	6.4	16 21.6	5.8	59.7	35	06 09	06 40	07 08	03 12	04 18	05 22	06 24	
	15	42 48.0	.. 26.8	91 23.5	6.3	16 27.4	5.7	59.8	30	06 02	06 31	06 57	03 04	04 08	05 13	06 15	
	16	57 47.7	26.3	105 48.8	6.2	16 33.1	5.6	59.8	20	05 47	06 14	06 38	02 50	03 52	04 55	05 57	
	17	72 47.5	25.9	120 14.0	6.2	16 38.7	5.5	59.9	N 10	05 33	05 58	06 21	02 38	03 38	04 40	05 42	
	18	87 47.3	S21 25.5	134 39.2	6.0	S16 44.2	5.4	59.9	0	05 17	05 43	06 05	02 26	03 24	04 25	05 28	
	19	102 47.0	25.0	149 04.2	6.0	16 49.6	5.3	59.9	S 10	05 00	05 27	05 49	02 15	03 11	04 11	05 14	
	20	117 46.8	24.6	163 29.2	5.9	16 54.9	5.2	60.0	20	04 40	05 08	05 32	02 03	02 57	03 56	04 59	
	21	132 46.6	.. 24.2	177 54.1	5.8	17 00.1	5.1	60.0	30	04 13	04 46	05 12	01 49	02 40	03 38	04 41	
	22	147 46.3	23.7	192 18.9	5.7	17 05.2	5.0	60.0	35	03 57	04 32	05 01	01 42	02 31	03 28	04 31	
	23	162 46.1	23.3	206 43.6	5.6	17 10.2	4.8	60.1	40	03 36	04 16	04 47	01 33	02 21	03 17	04 20	
								45	03 09	03 56	04 31	01 22	02 08	03 03	04 06		
S A T U R D A Y	14 00	177 45.9	S21 22.9	221 08.2	5.6	S17 15.0	4.8	60.1	S 50	02 31	03 30	04 12	01 10	01 53	02 46	03 50	
	01	192 45.6	22.4	235 32.8	5.4	17 19.8	4.6	60.1	52	02 10	03 17	04 02	01 04	01 46	02 39	03 42	
	02	207 45.4	22.0	249 57.2	5.4	17 24.4	4.6	60.2	54	01 42	03 02	03 51	00 57	01 38	02 30	03 34	
	03	222 45.2	.. 21.6	264 21.6	5.4	17 29.0	4.4	60.2	56	00 55	02 44	03 39	00 50	01 30	02 20	03 24	
	04	237 44.9	21.1	278 46.0	5.2	17 33.4	4.3	60.2	58	///	02 21	03 25	00 42	01 20	02 09	03 13	
	05	252 44.7	20.7	293 10.2	5.2	17 37.7	4.1	60.3	S 60	///	01 51	03 09	00 33	01 09	01 57	03 00	
	06	267 44.5	S21 20.3	307 34.4	5.1	S17 41.8	4.1	60.3									
	07	282 44.3	19.8	321 58.5	5.0	17 45.9	3.9	60.3	Lat.	Sun-set	Twilight		Moonset				
	08	297 44.0	19.4	336 22.5	5.0	17 49.8	3.8	60.4			Civil	Naut.	13	14	15	16	
	09	312 43.8	.. 18.9	350 46.5	4.8	17 53.6	3.7	60.4	N 72	h m	h m	h m	h m	h m	h m	h m	
	10	327 43.6	18.5	5 10.3	4.9	17 57.3	3.6	60.4	0	■	14 23	16 16	10 31	■	■	■	
	11	342 43.3	18.0	19 34.2	4.7	18 00.9	3.4	60.5	N 70	■	14 58	16 31	11 13	11 24	12 00	13 26	
	12	357 43.1	S21 17.6	33 57.9	4.7	S18 04.3	3.4	60.5	68	13 40	15 23	16 43	11 41	12 05	12 52	14 10	
	13	12 42.9	17.2	48 21.6	4.6	18 07.7	3.2	60.5	66	14 22	15 42	16 53	12 03	12 34	13 24	14 39	
	14	27 42.7	16.7	62 45.2	4.5	18 10.9	3.0	60.6	64	14 50	15 58	17 02	12 20	12 56	13 48	15 02	
	15	42 42.4	.. 16.3	77 08.7	4.5	18 13.9	3.0	60.6	62	15 12	16 11	17 10	12 34	13 13	14 07	15 19	
	16	57 42.2	15.8	105 55.6	4.4	18 16.9	2.8	60.6	60	15 29	16 22	17 17	12 47	13 27	14 23	15 34	
	17	72 42.0	15.4	120 19.0	4.3	S18 22.4	2.5	60.7	N 58	15 44	16 32	17 23	12 57	13 40	14 36	15 46	
	18	87 41.8	S21 14.9	134 42.3	4.2	18 24.9	2.5	60.7	56	15 56	16 41	17 28	13 06	13 51	14 47	15 57	
	19	102 41.5	14.5	149 05.5	4.2	18 27.4	2.2	60.7	54	16 07	16 49	17 33	13 14	14 00	14 58	16 06	
	20	117 41.3	14.0	163 28.7	4.2	18 29.6	2.2	60.8	52	16 16	16 56	17 38	13 21	14 09	15 06	16 15	
	21	132 41.1	.. 13.6	177 51.9	4.1	18 31.8	2.0	60.8	50	16 25	17 02	17 42	13 28	14 16	15 14	16 22	
	22	147 40.9	13.1	192 15.0	4.0	S18 33.8	1.9	60.8	45	16 43	17 16	17 52	13 42	14 32	15 31	16 39	
	23	162 40.6	12.7														
S U N D A Y	15 00	177 40.4	S21 12.2	206 38.0	4.0	S18 35.7	1.8	60.8	N 40	16 58	17 28	18 01	13 54	14 46	15 45	16 55	
	01	192 40.2	11.8	221 01.0	3.9	18 37.5	1.6	60.9	35	17 10	17 38	18 09	14 04	14 57	15 57	17 03	
	02	207 40.0	11.3	235 23.9	3.9	18 39.1	1.5	60.9	30	17 22	17 47	18 17	14 13	15 07	16 07	17 13	
	03	222 39.7	.. 10.9	249 46.8	3.8	18 40.6	1.3	60.9	20	17 40	18 04	18 31	14 28	15 24	16 25	17 29	
	04	237 39.5	10.4	264 09.6	3.8	18 41.9	1.2	60.9	N 10	17 57	18 20	18 45	14 41	15 39	16 40	17 44	
	05	252 39.3	10.0	278 32.4	3.8	18 43.1	1.1	61.0	0	18 13	18 35	19 01	14 54	15 53	16 55	17 58	
	06	267 39.1	S21 09.5	292 55.2	3.7	S18 44.2	0.9	61.0	S 10	18 29	18 51	19 18	15 06	16 07	17 09	18 11	
	07	282 38.8	09.0	307 17.9	3.6	18 45.1	0.8	61.0	20	18 46	19 10	19 38	15 19	16 22	17 25	18 26	
	08	297 38.6	08.6	321 40.5	3.7	18 45.9	0.7	61.0	30	19 05	19 32	20 04	15 35	16 39	17 42	18 42	
	09	312 38.4	.. 08.1	336 03.2	3.6	18 46.6	0.5	61.1	35	19 17	19 46	20 21	15 43	16 49	17 52	18 52	
	10	327 38.2	07.7	350 25.8	3.5	18 47.1	0.4	61.1	40	19 30	20 02	20 41	15 53	17 00	18 04	19 02	
	11	342 37.9	07.2	4 48.3	3.6	18 47.5	0.2	61.1	45	19 46	20 22	21 08	16 05	17 13	18 17	19 15	
	12	357 37.7	S21 06.7	19 10.9	3.5	S18 47.7	0.1	61.1	S 50	20 06	20 48	21 45	16 19	17 29	18 34	19 30	
	13	12 37.5	06.3	33 33.4	3.5	18 47.8	0.1	61.1	52	20 15	21 00	22 06	16 26	17 37	18 42	19 38	
	14	27 37.3	05.8	47 55.9	3.4	18 47.7	0.2	61.2	54	20 26	21 15	22 33	16 34	17 45	18 50	19 46	
	15	42 37.1	.. 05.4	62 18.3	3.5	18 47.5	0.3	61.2	56	20 38	21 33	23 17	16 42	17 55	19 00	19 55	
	16	57 36.8	04.9	76 40.8	3.4	18 47.2	0.5	61.2	58	20 52	21 55	///	16 52	18 06	19 11	20 05	
	17	72 36.6	04.4	91 03.2	3.3	18 46.7	0.6	61.2	S 60	21 08	22 24	///	17 02	18 18	19 24	20 16	
	18	87 36.4	S21 04.0	105 25.5	3.4	S18 46.1	0.7	61.2									
	19	102 36.2	03.5	119 47.9	3.4	18 45.4	0.9	61.2	Day	SUN		MOON					
	20	117 36.0	03.0	134 10.3	3.3	18 44.5	1.1	61.3		Eqn. of 00h	Time 12h	Mer. Pass.	Mer. Upper	Pass. Lower	Age	Phase	
	21	132 35.7	.. 02.6	148 32.6	3.3	18 43.4	1.2	61.3	13	m s	m s	h m	h m	h m	d		
	22	147 35.5	02.1	162 54.9	3.3	18 42.2	1.3	61.3	14	08 33	08 45	12 09	08 40	21 09	26		
	23	162 35.3	01.6	177 17.2	3.3	18 40.9	1.5	61.3	15	08 56	09 07	12 09	09 38	22 09	27		
									09 18	09 29	12 09	10 40	23 11	28			

		ARIES		VENUS -3-9		MARS -0-9		JUPITER -1-4		SATURN +0-7		STARS					
G.M.T.		G.H.A.	G.H.A.	Dec.	G.H.A.	Dec.	G.H.A.	Dec.	G.H.A.	Dec.	G.H.A.	Dec.	Name	S.H.A.	Dec.		
d	h																
MONDAY	1600	115 11-4	131 27-5	S 7 41-3	21 54-3	N27 13-4	186 07-3	S22 24-0	182 07-4	S21 39-2	Acamar	315 48-2	S 40 28-0				
	01	130 13-9	146 27-5	40-1	36 57-6	13-4	201 09-2	24-0	197 09-5	39-2	Achernar	335 56-3	S 57 26-4				
	02	145 16-3	161 27-5	38-9	52 00-8	13-4	216 11-0	23-9	212 11-7	39-1	Acrux	173 53-2	S 62 52-7				
	03	160 18-8	176 27-5	.. 37-6	67 04-0	.. 13-4	231 12-9	.. 23-8	222 13-8	.. 39-1	Adhara	255 43-3	S 28 55-3				
	04	175 21-3	191 27-5	36-4	82 07-3	13-4	246 14-7	23-7	242 16-0	39-0	Aldebaran	291 34-6	N 16 25-8				
	05	190 23-7	206 27-5	35-2	97 10-5	13-4	261 16-5	23-7	257 18-1	39-0							
	06	205 26-2	221 27-5	S 7 34-0	112 13-7	N27 13-4	276 18-4	S22 23-6	272 20-3	S21 39-0	Alioth	166 55-4	N 56 10-0				
	07	220 28-6	236 27-5	32-7	127 17-0	13-4	291 20-2	23-5	287 22-4	38-9	Alkaid	153 30-1	N 49 30-2				
	08	235 31-1	251 27-5	31-5	142 20-2	13-4	306 22-1	23-5	302 24-6	38-9	Al Na'ir	28 33-8	S 47 09-9				
	09	250 33-6	266 27-5	.. 30-3	157 23-4	.. 13-5	321 23-9	.. 23-4	317 26-7	.. 38-8	Alnilam	276 26-3	S 1 13-3				
	10	265 36-0	281 27-5	29-1	172 26-7	13-5	336 25-7	23-3	332 28-9	38-8	Alphard	218 34-7	S 8 29-4				
	11	280 38-5	296 27-5	27-8	187 29-9	13-5	351 27-6	23-2	347 31-0	38-7							
	12	295 41-0	311 27-5	S 7 26-6	202 33-1	N27 13-5	6 29-4	S22 23-2	2 33-2	S21 38-7	Alphecca	126 44-7	N 26 50-6				
	13	310 43-4	326 27-5	25-4	217 36-3	13-5	21 31-3	23-1	17 35-3	38-7	Alpheratz	358 24-6	N 28 52-6				
	14	325 45-9	341 27-5	24-2	232 39-6	13-5	36 33-1	23-0	32 37-5	38-6	Altair	62 47-2	N 8 45-9				
	15	340 48-4	356 27-5	.. 22-9	247 42-8	.. 13-5	51 35-0	.. 23-0	47 39-6	.. 38-6	Ankaa	353 54-9	S 42 31-3				
	16	355 50-8	11 27-5	21-7	262 46-0	13-5	66 36-8	22-9	62 41-8	38-5	Antares	113 15-1	S 26 20-6				
	17	10 53-3	26 27-5	20-5	277 49-2	13-5	81 38-6	22-8	77 43-9	38-5							
	18	25 55-8	41 27-5	S 7 19-3	292 52-4	N27 13-5	96 40-5	S22 22-7	92 46-1	S21 38-4	Arcturus	146 31-9	N 19 23-0				
	19	40 58-2	56 27-6	18-0	307 55-6	13-5	111 42-3	22-7	107 48-2	38-4	Atria	108 52-9	S 68 57-2				
	20	56 00-7	71 27-6	16-8	322 58-9	13-5	126 44-2	22-6	122 50-4	38-4	Avior	234 33-5	S 59 23-1				
	21	71 03-1	86 27-6	.. 15-6	338 02-1	.. 13-5	141 46-0	.. 22-5	137 52-5	.. 38-3	Bellatrix	279 14-2	N 6 18-8				
	22	86 05-6	101 27-6	14-4	353 05-3	13-5	156 47-8	22-5	152 54-7	38-3	Betelgeuse	271 43-9	N 7 23-9				
23	101 08-1	116 27-6	13-1	8 08-5	13-5	171 49-7	22-4	167 56-8	38-2								
TUESDAY	1700	116 10-5	131 27-6	S 7 11-9	23 11-7	N27 13-5	186 51-5	S22 22-3	182 59-0	S21 38-2	Canopus	264 13-2	S 52 40-7				
	01	131 13-0	146 27-6	10-7	38 14-9	13-5	201 53-4	22-2	198 01-1	38-1	Capella	281 32-6	N 45 57-6				
	02	146 15-5	161 27-7	09-4	53 18-1	13-5	216 55-2	22-2	213 03-3	38-1	Deneb	49 58-9	N 45 08-5				
	03	161 17-9	176 27-7	.. 08-2	68 21-3	.. 13-5	231 57-1	.. 22-1	228 05-4	.. 38-0	Denebola	183 13-9	N 14 47-3				
	04	176 20-4	191 27-7	07-0	83 24-5	13-5	246 58-9	22-0	243 07-6	38-0	Diphda	349 35-7	S 18 12-2				
	05	191 22-9	206 27-7	05-8	98 27-7	13-5	262 00-7	21-9	258 09-7	38-0							
	06	206 25-3	221 27-7	S 7 04-5	113 30-9	N27 13-5	277 02-6	S22 21-9	273 11-9	S21 37-9	Dubhe	194 39-8	N 61 57-4				
	07	221 27-8	236 27-8	03-3	128 34-1	13-5	292 04-4	21-8	288 14-0	37-9	Elmath	279 02-4	N 28 34-5				
	08	236 30-3	251 27-8	02-1	143 37-3	13-5	307 06-3	21-7	303 16-2	37-8	Eltanin	91 05-0	N 51 29-6				
	09	251 32-7	266 27-8	7 00-8	158 40-5	.. 13-5	322 08-1	.. 21-7	318 18-3	.. 37-8	Enif	34 26-3	N 9 41-8				
	10	266 35-2	281 27-8	6 59-6	173 43-7	13-5	337 10-0	21-6	333 20-5	37-7	Fomalhaut	16 07-9	S 29 49-9				
	11	281 37-6	296 27-8	58-4	188 46-9	13-5	352 11-8	21-5	348 22-6	37-7							
	12	296 40-1	311 27-9	S 6 57-2	203 50-1	N27 13-5	7 13-6	S22 21-4	3 24-8	S21 37-7	Gacrux	172 44-8	S 56 53-4				
	13	311 42-6	326 27-9	55-9	218 53-3	13-5	22 15-5	21-4	18 26-9	37-6	Gienah	176 32-9	S 17 19-5				
	14	326 45-0	341 27-9	54-7	233 56-5	13-5	37 17-3	21-3	33 29-1	37-6	Hadar	149 44-1	S 60 10-8				
	15	341 47-5	356 28-0	.. 53-5	248 59-6	.. 13-5	52 19-2	.. 21-2	48 31-2	.. 37-5	Hamal	328 45-4	N 23 16-7				
	16	356 50-0	11 28-0	52-2	264 02-8	13-5	67 21-0	21-2	63 33-4	37-5	Kaus Aust.	84 36-7	S 34 24-1				
	17	11 52-4	26 28-0	51-0	279 06-0	13-5	82 22-9	21-1	78 35-5	37-4							
	18	26 54-9	41 28-0	S 6 49-8	294 09-2	N27 13-4	97 24-7	S22 21-0	93 37-7	S21 37-4	Kochab	137 18-8	N 74 18-7				
	19	41 57-4	56 28-1	48-5	309 12-4	13-4	112 26-5	20-9	108 39-8	37-3	Markab	14 18-0	N 14 59-7				
	20	56 59-8	71 28-1	47-3	324 15-6	13-4	127 28-4	20-9	123 42-0	37-3	Menkar	314 56-4	N 3 56-1				
	21	72 02-3	86 28-1	.. 46-1	339 18-7	.. 13-4	142 30-2	.. 20-8	138 44-1	.. 37-3	Menkent	148 54-3	S 36 10-5				
	22	87 04-7	101 28-2	44-8	354 21-9	13-4	157 32-1	20-7	153 46-3	37-2	Miaplacidus	221 47-1	S 69 33-3				
23	102 07-2	116 28-2	43-6	9 25-1	13-4	172 33-9	20-6	168 48-4	37-2								
WEDNESDAY	1800	117 09-7	131 28-2	S 6 42-4	24 28-3	N27 13-4	187 35-8	S22 20-6	183 50-6	S21 37-1	Mirfak	309 36-8	N 49 43-3				
	01	132 12-1	146 28-3	41-2	39 31-4	13-4	202 37-6	20-5	198 52-7	37-1	Nunki	76 47-7	S 26 20-7				
	02	147 14-6	161 28-3	39-9	54 34-6	13-4	217 39-4	20-4	213 54-9	37-0	Peacock	54 22-2	S 56 51-7				
	03	162 17-1	176 28-3	.. 38-7	69 37-8	.. 13-4	232 41-3	.. 20-4	228 57-0	.. 37-0	Pollux	244 15-7	N 28 07-1				
	04	177 19-5	191 28-4	37-5	84 40-9	13-4	247 43-1	20-3	243 59-2	37-0	Procyon	245 40-8	N 5 19-4				
	05	192 22-0	206 28-4	36-2	99 44-1	13-4	262 45-0	20-2	259 01-3	36-9							
	06	207 24-5	221 28-4	S 6 35-0	114 47-3	N27 13-4	277 46-8	S22 20-1	274 03-5	S21 36-9	Rasalhague	96 43-5	N 12 35-3				
	07	222 26-9	236 28-5	33-8	129 50-4	13-4	292 48-7	20-1	289 05-6	36-8	Regulus	208 25-4	N 12 09-4				
	08	237 29-4	251 28-5	32-5	144 53-6	13-4	307 50-5	20-0	304 07-8	36-8	Rigel	281 49-8	S 8 14-9				
	09	252 31-9	266 28-6	.. 31-3	159 56-8	.. 13-4	322 52-3	.. 19-9	319 09-9	.. 36-7	Rigel Kent.	140 45-9	S 60 40-1				
	10	267 34-3	281 28-6	30-1	174 59-9	13-4	337 54-2	19-8	334 12-1	36-7	Sabik	102 58-2	S 15 40-5				
	11	282 36-8	296 28-6	28-8	190 03-1	13-4	352 56-0	19-8	349 14-2	36-6							
	12	297 39-2	311 28-7	S 6 27-6	205 06-2	N27 13-3	7 57-9	S22 19-7	4 16-4	S21 36-6	Schedar	350 25-8	N 56 19-6				
	13	312 41-7	326 28-7	26-4	220 09-4	13-3	22 59-7	19-6	19 18-5	36-6	Shaula	97 16-1	S 37 04-4				
	14	327 44-2	341 28-8	25-1	235 12-5	13-3	38 01-6	19-5	34 20-7	36-5	Sirius	259 08-3	S 16 39-9				
	15	342 46-6	356 28-8	.. 23-9	250 15-7	.. 13-3	53 03-4	.. 19-5	49 22-8	.. 36-5	Spica	159 13-0	S 10 57-4				
	16	357 49-1	11 28-9	22-6	265 18-8	13-3	68 05-3	19-4	64 25-0	36-4	Suhail	223 21-1	S 43 16-5				
	17	12 51-6	26 28-9	21-4	280 22-0	13-3	83 07-1	19-3	79 27-1	36-4							
	18	27 54-0	41 28-9	S 6 20-2	295 25-1	N27 13-3	98 08-9	S22 19-3	94 29-3	S21 36-3	Vega	81 06-2	N 38 44-8				
	19	42 56-5	56 29-0	18-9	310 28-3	13-3	113 10-8	19-2	109 31-4	36-3	Zuben'ubi	137 49-4	S 15 52-7				
	20	57 59-0	71 29-0	17-7	325 31-4	13-3	128 12-6	19-1	124 33-6	36-3							
	21	73 01-4	86 29-1	.. 16-5	340 34-6	.. 13-3	143 14-5	.. 19-0	139 35-7	.. 36-2		S.H.A.	Mer. Pass.				
	22	88 03-9	101 29-1	15-2	355 37-7	13-3	158 16-3	19-0	154 37-9	36-2	Venus	15 17-1	15 14				
23	103 06-4	116 29-2	14-0	10 40-9	13-3	173 18-2	18-9	169 40-0	36-1	Mars	267 01-2	22 22					
Mer. Pass. 16 12-6		v	0-0	d	1-2	v	3-2	d	0-0	v	1-8	d	0-1	v	2-1	d	0-0

G.M.T.		SUN		MOON				Lat.	Twilight		Sun-rise	Moonrise							
		G.H.A.	Dec.	G.H.A.	φ	Dec.	d		H.P.	Naut.		Civil	16	17	18	19			
d	h	°	'	°	'	°	'	°	'	°	'	h	m	h	m	h	m	h	m
MONDAY	16 00	177	35.1	S 21	01.2	191	39.5	3.3	S 18	39.4	1.6	61.3	N 72	07 56	09 44	11 46	10 05	10 19	10 25
	01	192	34.9		00.7	206	01.8	3.3	18	37.8	1.8	61.3	70	07 42	09 12	11 46	10 05	10 19	10 25
	02	207	34.7	21	00.2	220	24.1	3.3	18	36.0	1.9	61.3	68	07 31	08 49	10 24	09 20	10 04	10 13
	03	222	34.4	20	59.7	234	46.4	3.3	18	34.1	2.0	61.4	66	07 21	08 31	09 47	08 51	09 26	10 03
	04	237	34.2		59.3	249	08.7	3.3	18	32.1	2.2	61.4	64	07 13	08 16	09 21	08 28	09 08	09 35
	05	252	34.0		58.8	263	31.0	3.3	18	29.9	2.3	61.4	62	07 05	08 03	09 01	08 10	08 53	09 24
	06	267	33.8	S 20	58.3	277	53.3	3.3	S 18	27.6	2.5	61.4	60	06 59	07 53	08 45	07 56	08 41	09 15
	07	282	33.6		57.8	292	15.6	3.3	18	25.1	2.6	61.4	N 58	06 53	07 43	08 31	07 43	08 30	09 07
	08	297	33.4		57.4	306	37.9	3.3	18	22.5	2.8	61.4	56	06 48	07 35	08 19	07 32	08 21	08 59
	09	312	33.1		56.9	321	00.2	3.3	18	19.7	2.8	61.4	54	06 43	07 27	08 09	07 22	08 12	08 53
	10	327	32.9		56.4	335	22.5	3.4	18	16.9	3.1	61.4	52	06 39	07 21	07 59	07 14	08 05	08 47
	11	342	32.7		55.9	349	44.9	3.3	18	13.8	3.2	61.4	50	06 34	07 15	07 51	07 06	07 58	08 41
	12	357	32.5	S 20	55.5	4	07.2	3.4	S 18	10.6	3.3	61.4	45	06 25	07 01	07 34	06 49	07 43	08 30
	13	12	32.3		55.0	18	29.6	3.3	18	07.3	3.4	61.4	N 40	06 16	06 50	07 19	06 36	07 31	08 20
	14	27	32.1		54.5	32	51.9	3.4	18	03.9	3.6	61.5	35	06 09	06 40	07 07	06 24	07 21	08 12
	15	42	31.9		54.0	47	14.3	3.5	18	00.3	3.7	61.5	30	06 01	06 31	06 56	06 15	07 12	08 05
	16	57	31.6		53.6	61	36.8	3.4	17	56.6	3.9	61.5	20	05 47	06 14	06 38	05 57	06 57	07 52
	17	72	31.4		53.1	75	59.2	3.5	17	52.7	4.0	61.5	N 10	05 33	05 59	06 22	05 42	06 43	07 41
	18	87	31.2	S 20	52.6	90	21.7	3.5	S 17	48.7	4.1	61.5	0	05 19	05 44	06 07	05 28	06 30	07 31
	19	102	31.0		52.1	104	44.2	3.5	17	44.6	4.3	61.5	S 10	05 02	05 28	05 51	05 14	06 18	07 21
	20	117	30.8		51.6	119	06.7	3.5	17	40.3	4.4	61.5	20	04 42	05 10	05 34	04 59	06 04	07 09
	21	132	30.6		51.1	133	29.2	3.6	17	35.9	4.5	61.5	30	04 16	04 48	05 15	04 41	05 48	06 57
	22	147	30.4		50.7	147	51.8	3.6	17	31.4	4.7	61.5	35	04 00	04 35	05 04	04 31	05 39	06 50
23	162	30.2		50.2	162	14.4	3.7	17	26.7	4.8	61.5	40	03 40	04 19	04 51	04 20	05 29	06 41	
17 00	177	30.0	S 20	49.7	176	37.1	3.6	S 17	21.9	4.9	61.5	45	03 14	04 00	04 35	04 06	05 17	06 31	07 47
01	192	29.7		49.2	190	59.7	3.8	17	17.0	5.1	61.5	S 50	02 38	03 35	04 16	03 50	05 02	06 19	
02	207	29.5		48.7	205	22.5	3.7	17	11.9	5.2	61.5	52	02 18	03 22	04 07	03 42	04 55	06 14	
03	222	29.3		48.2	219	45.2	3.8	17	06.7	5.3	61.5	54	01 53	03 08	03 57	03 34	04 48	06 08	
04	237	29.1		47.7	234	08.0	3.9	17	01.4	5.4	61.5	56	01 14	02 51	03 45	03 24	04 39	06 01	
05	252	28.9		47.3	248	30.9	3.9	16	56.0	5.6	61.5	58	///	02 30	03 32	03 13	04 29	05 53	
06	267	28.7	S 20	46.8	262	53.8	3.9	S 16	50.4	5.7	61.5	S 60	///	02 02	03 16	03 00	04 18	05 45	
07	282	28.5		46.3	277	16.7	4.0	16	44.7	5.8	61.5								
08	297	28.3		45.8	291	39.7	4.0	16	38.9	6.0	61.5	Lat.	Sun-set	Twilight		Moonset			
09	312	28.1		45.3	306	02.7	4.1	16	32.9	6.0	61.4			Civil	Naut.	16	17	18	19
10	327	27.9		44.8	320	25.8	4.1	16	26.9	6.2	61.4	N 72	12 36	14 37	16 25	13 26	14 38	16 58	
11	342	27.7		44.3	334	48.9	4.2	16	20.7	6.3	61.4	70	13 56	15 32	16 50	14 10	15 52	17 41	
12	357	27.4	S 20	43.8	349	12.1	4.2	S 16	14.4	6.4	61.4	68	14 34	15 50	17 00	14 39	16 13	17 56	
13	12	27.2		43.3	3	35.3	4.3	16	08.0	6.6	61.4	66	15 00	16 05	17 08	15 02	16 31	18 08	
14	27	27.0		42.8	17	58.6	4.3	16	01.4	6.6	61.4	64	15 20	16 18	17 15	15 19	16 45	18 18	
15	42	26.8		42.3	32	21.9	4.4	15	54.8	6.8	61.4	62	15 36	16 28	17 22	15 34	16 57	18 26	
16	57	26.6		41.8	46	45.3	4.5	15	48.0	6.9	61.4	60	15 50	16 38	17 28	15 46	17 07	18 34	
17	72	26.4		41.3	61	08.8	4.5	15	41.1	7.0	61.4	N 58	15 50	16 38	17 28	15 57	17 16	18 40	
18	87	26.2	S 20	40.8	75	32.3	4.6	S 15	34.1	7.1	61.4	56	16 02	16 46	17 33	16 06	17 24	18 46	
19	102	26.0		40.3	89	55.9	4.6	15	27.0	7.2	61.4	54	16 12	16 53	17 38	16 15	17 31	18 52	
20	117	25.8		39.8	104	19.5	4.7	15	19.8	7.3	61.3	52	16 21	17 00	17 42	16 22	17 38	18 57	
21	132	25.6		39.3	118	43.2	4.8	15	12.5	7.5	61.3	50	16 29	17 06	17 46	16 39	17 52	19 07	
22	147	25.4		38.8	133	07.0	4.8	15	05.0	7.5	61.3	45	16 47	17 19	17 56	16 52	18 03	19 15	
23	162	25.2		38.3	147	30.8	4.9	14	57.5	7.6	61.3	N 40	17 01	17 31	18 04	16 52	18 03	19 15	
18 00	177	25.0	S 20	37.8	161	54.7	5.0	S 14	49.9	7.8	61.3	35	17 13	17 41	18 12	17 03	18 12	19 23	
01	192	24.8		37.3	176	18.7	5.0	14	42.1	7.8	61.3	30	17 24	17 50	18 19	17 13	18 21	19 29	
02	207	24.6		36.8	190	42.7	5.1	14	34.3	8.0	61.3	20	17 42	18 06	18 33	17 29	18 35	19 40	
03	222	24.4		36.3	205	06.8	5.1	14	26.3	8.0	61.2	N 10	17 58	18 21	18 47	17 44	18 48	19 50	
04	237	24.2		35.8	219	30.9	5.3	14	18.3	8.2	61.2	0	18 14	18 36	19 02	17 58	19 00	19 59	
05	252	24.0		35.3	233	55.2	5.3	14	10.1	8.2	61.2	S 10	18 29	18 52	19 18	18 11	19 11	20 08	
06	267	23.8	S 20	34.8	248	19.5	5.3	S 14	01.9	8.3	61.2	20	18 46	19 09	19 38	18 26	19 24	20 17	
07	282	23.6		34.3	262	43.8	5.5	13	53.6	8.4	61.2	30	19 05	19 31	20 03	18 42	19 38	20 28	
08	297	23.4		33.8	277	08.3	5.5	13	45.2	8.5	61.2	35	19 16	19 45	20 20	18 52	19 46	20 34	
09	312	23.2		33.3	291	32.8	5.6	13	36.7	8.6	61.1	40	19 29	20 00	20 39	19 02	19 55	20 41	
10	327	23.0		32.8	305	57.4	5.6	13	28.1	8.7	61.1	45	19 44	20 19	21 05	19 15	20 05	20 49	
11	342	22.8		32.3	320	22.0	5.8	13	19.4	8.8	61.1	S 50	20 03	20 44	21 41	19 30	20 18	20 58	
12	357	22.6	S 20	31.7	334	46.8	5.8	S 13	10.6	8.9	61.1	52	20 12	20 57	22 00	19 38	20 24	21 03	
13	12	22.4		31.2	349	11.6	5.8	13	01.7	8.9	61.1	54	20 22	21 11	22 25	19 46	20 31	21 08	
14	27	22.2		30.7	3	36.4	6.0	12	52.8	9.0	61.0	56							

		ARIES		VENUS -4.0		MARS -0.9		JUPITER -1.4		SATURN +0.7		STARS			
G.M.T.		G.H.A.	G.H.A.	Dec.	G.H.A.	Dec.	G.H.A.	Dec.	G.H.A.	Dec.	G.H.A.	Dec.	Name	S.H.A.	Dec.
d	h														
19	00	118 08.8	131 29.2 S	6 12.8	25 44.0 N	27 13.2	188 20.0	S22 18.8	184 42.2	S21 36.1			Acamar	315 48.3	S 40 28.0
	01	133 11.3	146 29.3	11.5	40 47.1	13.2	203 21.8	18.7	199 44.3	36.0			Achernar	335 56.3	S 57 26.4
	02	148 13.7	161 29.3	10.3	55 50.3	13.2	218 23.7	18.7	214 46.5	36.0			Acrux	173 53.2	S 62 52.7
	03	163 16.2	176 29.4	09.1	70 53.4	13.2	233 25.5	18.6	229 48.6	35.9			Adhara	255 43.3	S 28 55.3
	04	178 18.7	191 29.4	07.8	85 56.5	13.2	248 27.4	18.5	244 50.8	35.9			Aldebaran	291 34.6	N 16 25.8
05	193 21.1	206 29.5	06.6	100 59.7	13.2	263 29.2	18.4	259 52.9	35.9						
06	208 23.6	221 29.5 S	6 05.3	116 02.8 N	27 13.2	278 31.1	S22 18.4	274 55.1	S21 35.8				Alioth	166 55.3	N 56 10.0
07	223 26.1	236 29.6	04.1	131 05.9	13.2	293 32.9	18.3	289 57.2	35.8				Alkaid	153 30.1	N 49 30.2
08	238 28.5	251 29.7	02.9	146 09.0	13.2	308 34.8	18.2	304 59.4	35.7				Al Na'ir	28 33.8	S 47 09.1
09	253 31.0	266 29.7	01.6	161 12.2	13.2	323 36.6	18.1	320 01.5	35.7				Alnilam	276 26.3	S 1 13.1
10	268 33.5	281 29.8	00.4	176 15.3	13.1	338 38.4	18.1	335 03.7	35.6				Alphard	218 34.7	S 8 29.4
11	283 35.9	296 29.8	5 59.2	191 18.4	13.1	353 40.3	18.0	350 05.8	35.6						
12	298 38.4	311 29.9 S	5 57.9	206 21.5 N	27 13.1	8 42.1	S22 17.9	5 08.0	S21 35.6				Alphecca	126 44.7	N 26 50.6
13	313 40.8	326 30.0	56.7	221 24.6	13.1	23 44.0	17.8	20 10.1	35.5				Alpheratz	358 24.6	N 28 52.6
14	328 43.3	341 30.0	55.4	236 27.8	13.1	38 45.8	17.8	35 12.3	35.5				Altair	62 47.2	N 8 45.9
15	343 45.8	356 30.1	54.2	251 30.9	13.1	53 47.7	17.7	50 14.4	35.4				Ankaa	353 54.9	S 42 31.3
16	358 48.2	11 30.1	53.0	266 34.0	13.1	68 49.5	17.6	65 16.6	35.4				Antares	113 15.1	S 26 20.6
17	13 50.7	26 30.2	51.7	281 37.1	13.1	83 51.4	17.5	80 18.7	35.3						
18	28 53.2	41 30.3 S	5 50.5	296 40.2 N	27 13.1	98 53.2	S22 17.5	95 20.9	S21 35.3				Arcturus	146 31.9	N 19 23.0
19	43 55.6	56 30.3	49.3	311 43.3	13.0	113 55.0	17.4	110 23.0	35.3				Atria	108 52.8	S 68 57.2
20	58 58.1	71 30.4	48.0	326 46.4	13.0	128 56.9	17.3	125 25.2	35.2				Avior	234 33.5	S 59 23.1
21	74 00.6	86 30.5	46.8	341 49.5	13.0	143 58.7	17.2	140 27.3	35.2				Bellatrix	279 14.2	N 6 18.8
22	89 03.0	101 30.5	45.5	356 52.6	13.0	159 00.6	17.2	155 29.5	35.1				Betelgeuse	271 43.9	N 7 23.9
23	104 05.5	116 30.6	44.3	11 55.7	13.0	174 02.4	17.1	170 31.6	35.1						
20	00	119 08.0	131 30.7 S	5 43.1	26 58.8 N	27 13.0	189 04.3	S22 17.0	185 33.8	S21 35.0			Canopus	264 13.2	S 52 40.7
	01	134 10.4	146 30.7	41.8	42 01.9	13.0	204 06.1	16.9	200 35.9	35.0			Capella	281 32.6	N 45 57.6
	02	149 12.9	161 30.8	40.6	57 05.0	12.9	219 08.0	16.9	215 38.1	34.9			Deneb	49 58.9	N 45 08.5
	03	164 15.3	176 30.9	39.3	72 08.1	12.9	234 09.8	16.8	230 40.2	34.9			Denebola	183 13.8	N 14 47.3
	04	179 17.8	191 31.0	38.1	87 11.2	12.9	249 11.7	16.7	245 42.4	34.9			Diphda	349 35.7	S 18 12.2
05	194 20.3	206 31.0	36.9	102 14.3	12.9	264 13.5	16.6	260 44.5	34.8						
06	209 22.7	221 31.1 S	5 35.6	117 17.4 N	27 12.9	279 15.3	S22 16.6	275 46.7	S21 34.8				Dubhe	194 39.8	N 61 57.4
07	224 25.2	236 31.2	34.4	132 20.5	12.9	294 17.2	16.5	290 48.8	34.7				Elmath	279 02.4	N 28 34.5
08	239 27.7	251 31.2	33.1	147 23.6	12.9	309 19.0	16.4	305 51.0	34.7				Eltanin	91 05.0	N 51 29.5
09	254 30.1	266 31.3	31.9	162 26.7	12.8	324 20.9	16.4	320 53.1	34.6				Enif	34 26.3	N 9 41.7
10	269 32.6	281 31.4	30.7	177 29.8	12.8	339 22.7	16.3	335 55.3	34.6				Fomalhaut	16 07.9	S 29 49.9
11	284 35.1	296 31.5	29.4	192 32.9	12.8	354 24.6	16.2	350 57.5	34.5						
12	299 37.5	311 31.5 S	5 28.2	207 35.9 N	27 12.8	9 26.4	S22 16.1	5 59.6	S21 34.5				Gacrux	172 44.8	S 56 53.4
13	314 40.0	326 31.6	26.9	222 39.0	12.8	24 28.3	16.1	21 01.8	34.5				Gienah	176 32.9	S 17 19.5
14	329 42.5	341 31.7	25.7	237 42.1	12.8	39 30.1	16.0	36 03.9	34.4				Hadar	149 44.1	S 60 10.8
15	344 44.9	356 31.8	24.5	252 45.2	12.7	54 32.0	15.9	51 06.1	34.4				Hamal	328 45.4	N 23 16.7
16	359 47.4	11 31.9	23.2	267 48.3	12.7	69 33.8	15.8	66 08.2	34.3				Kaus Aust.	84 36.7	S 34 24.1
17	14 49.8	26 31.9	22.0	282 51.3	12.7	84 35.6	15.8	81 10.4	34.3						
18	29 52.3	41 32.0 S	5 20.7	297 54.4 N	27 12.7	99 37.5	S22 15.7	96 12.5	S21 34.2				Kochab	137 18.8	N 74 18.7
19	44 54.8	56 32.1	19.5	312 57.5	12.7	114 39.3	15.6	111 14.7	34.2				Markab	14 18.0	N 14 59.7
20	59 57.2	71 32.2	18.2	328 00.6	12.7	129 41.2	15.5	126 16.8	34.1				Menkar	314 56.4	N 3 56.1
21	74 59.7	86 32.3	17.0	343 03.6	12.6	144 43.0	15.5	141 19.0	34.1				Menkent	148 54.3	S 36 10.5
22	90 02.2	101 32.4	15.8	358 06.7	12.6	159 44.9	15.4	156 21.1	34.1				Miaplacidus	221 47.1	S 69 33.4
23	105 04.6	116 32.5	14.5	13 09.8	12.6	174 46.7	15.3	171 23.3	34.0						
21	00	120 07.1	131 32.5 S	5 13.3	28 12.8 N	27 12.6	189 48.6	S22 15.2	186 25.4	S21 34.0			Mirfak	309 36.9	N 49 43.1
	01	135 09.6	146 32.6	12.0	43 15.9	12.6	204 50.4	15.1	201 27.6	33.9			Nunki	76 47.7	S 26 20.7
	02	150 12.0	161 32.7	10.8	58 19.0	12.6	219 52.3	15.1	216 29.7	33.9			Peacock	54 22.2	S 56 51.7
	03	165 14.5	176 32.8	09.5	73 22.0	12.5	234 54.1	15.0	231 31.9	33.8			Pollux	244 15.7	N 28 07.1
	04	180 16.9	191 32.9	08.3	88 25.1	12.5	249 56.0	14.9	246 34.0	33.8			Procyon	245 40.8	N 5 19.4
05	195 19.4	206 33.0	07.1	103 28.1	12.5	264 57.8	14.8	261 36.2	33.8						
06	210 21.9	221 33.1 S	5 05.8	118 31.2 N	27 12.5	279 59.6	S22 14.8	276 38.3	S21 33.7				Rasalhague	96 43.5	N 12 35.2
07	225 24.3	236 33.2	04.6	133 34.2	12.5	295 01.5	14.7	291 40.5	33.7				Regulus	208 25.3	N 12 09.4
08	240 26.8	251 33.3	03.3	148 37.3	12.4	310 03.3	14.6	306 42.6	33.6				Rigel	281 49.8	S 8 15.0
09	255 29.3	266 33.3	02.1	163 40.3	12.4	325 05.2	14.5	321 44.8	33.6				Rigel Kent.	140 45.9	S 60 40.1
10	270 31.7	281 33.4	00.8	178 43.4	12.4	340 07.0	14.5	336 46.9	33.5				Sabik	102 58.2	S 15 40.5
11	285 34.2	296 33.5	4 59.6	193 46.4	12.4	355 08.9	14.4	351 49.1	33.5						
12	300 36.7	311 33.6 S	4 58.4	208 49.5 N	27 12.4	10 10.7	S22 14.3	6 51.2	S21 33.4				Schedar	350 25.8	N 56 19.6
13	315 39.1	326 33.7	57.1	223 52.5	12.3	25 12.6	14.2	21 53.4	33.4				Shaula	97 16.0	S 37 04.4
14	330 41.6	341 33.8	55.9	238 55.6	12.3	40 14.4	14.2	36 55.5	33.4				Sirius	259 08.3	S 16 39.9
15	345 44.1	356 33.9	54.6	253 58.6	12.3	55 16.3	14.1	51 57.7	33.3				Spica	159 13.0	S 10 57.4
16	0 46.5	11 34.0	53.4	269 01.7	12.3	70 18.1	14.0	66 59.8	33.3				Suhail	223 21.1	S 43 16.5
17	15 49.0	26 34.1	52.1	284 04.7	12.3	85 20.0	13.9	82 02.0	33.2						
18	30 51.4	41 34.2 S	4 50.9	299 07.7 N	27 12.2	100 21.8	S22 13.9	97 04.1	S21 33.2				Vega	81 06.2	N 38 44.8
19	45 53.9	56 34.3	49.7	314 10.8	12.2	115 23.7	13.8	112 06.3	33.1				Zuben'ubi	137 49.4	S 15 52.7
20	60 56.4	71 34.4	48.4	329 13.8	12.2	130 25.5	13.7	127 08.4	33.1						
21	75 58.8	86 34.5	47.2	344 16.8	12.2	145 27.4	13.6	142 10.6	33.0					S.H.A.	Mer. Pass.
22	91 01.3	101 34.6	45.9	359 19.9	12.2	160 29.2	13.5	157 12.8	33.0				Venus	12 22.7	15 14
23	106 03.8	116 34.7	44.7	14 22.9	12.1	175 31.0	13.5	172 14.9	33.0				Mars	267 50.8	22 08
													Jupiter	69 56.3	11 22
													Saturn	66 25.8	11 36
Mer. Pass.		16 00.8	v 0.1	d 1.2	v 3.1	d 0.0	v 1.8	d 0.1	v 2.2	d 0.0					

G.M.T.		SUN		MOON				Lat.	Twilight		Sun-rise	Moonrise																
		G.H.A.	Dec.	G.H.A.	<i>v</i>	Dec.	<i>d</i>		H.P.	Naut.		Civil	19	20	21	22												
T H U R S D A Y	d	h	°	'	°	'	°	'	°	'	h	m	h	m	h	m	h	m										
	00	177	20.2	S20	25.6	147	49.3	6.7	S11	19.1	9.8	60.8	N70	07	35	09	03	11	07	10	25	10	25	10	24	10	24	
	01	192	20.0		25.1	162	15.0	6.8	11	09.3	9.8	60.8	N68	07	25	08	41	10	11	10	13	10	19	10	23	10	28	
	02	207	19.8		24.5	176	40.8	6.8	10	59.5	9.9	60.7	N66	07	16	08	24	09	38	10	03	10	14	10	22	10	31	
	03	222	19.6	..	24.0	191	06.6	7.0	10	49.6	9.9	60.7	N64	07	08	08	10	09	14	09	54	10	09	10	22	10	34	
	04	237	19.4		23.5	205	32.6	7.0	10	39.7	10.0	60.7	N62	07	01	07	59	08	55	09	47	10	05	10	21	10	36	
	05	252	19.2		23.0	219	58.6	7.1	10	29.7	10.1	60.6	N60	06	55	07	48	08	39	09	41	10	02	10	21	10	38	
	06	267	19.0	S20	22.5	234	24.7	7.1	S10	19.6	10.1	60.6	N58	06	50	07	40	08	27	09	35	09	59	10	20	10	40	
	07	282	18.8		21.9	248	50.8	7.3	10	09.5	10.2	60.6	N56	06	45	07	32	08	15	09	30	09	57	10	20	10	42	
	08	297	18.6		21.4	263	17.1	7.3	9	59.3	10.2	60.6	N54	06	41	07	25	08	05	09	26	09	54	10	19	10	44	
	09	312	18.4	..	20.9	277	43.4	7.4	9	49.1	10.3	60.5	N52	06	36	07	18	07	56	09	22	09	52	10	19	10	45	
	10	327	18.3		20.4	292	09.8	7.5	9	38.8	10.4	60.5	N50	06	32	07	12	07	49	09	18	09	50	10	19	10	46	
	11	342	18.1		19.8	306	36.3	7.5	9	28.4	10.3	60.5	N45	06	23	06	59	07	32	09	10	09	46	10	18	10	49	
	12	357	17.9	S20	19.3	321	02.8	7.6	S	9	18.1	10.5	60.4	N40	06	15	06	48	07	18	09	03	09	42	10	17	10	51
	13	12	17.7		18.8	335	29.4	7.7	9	07.6	10.5	60.4	N35	06	08	06	39	07	06	08	58	09	39	10	17	10	53	
	14	27	17.5		18.2	349	56.1	7.8	8	57.1	10.5	60.4	N30	06	01	06	30	06	56	08	53	09	36	10	17	10	55	
	15	42	17.3	..	17.7	4	22.9	7.8	8	46.6	10.5	60.3	N20	05	47	06	14	06	38	08	44	09	31	10	16	10	58	
	16	57	17.1		17.2	18	49.7	7.9	8	36.1	10.7	60.3	N10	05	34	06	00	06	22	08	36	09	27	10	15	11	01	
	17	72	16.9		16.7	33	16.6	8.0	8	25.4	10.6	60.3	N0	05	20	05	45	06	07	08	29	09	23	10	14	11	04	
	18	87	16.7	S20	16.1	47	43.6	8.1	S	8	14.8	10.7	60.2	S10	05	04	05	30	05	52	08	21	09	19	10	14	11	07
	19	102	16.5		15.6	62	10.7	8.1	8	04.1	10.7	60.2	N20	04	44	05	12	05	36	08	13	09	15	10	13	11	10	
	20	117	16.4		15.1	76	37.8	8.3	7	53.4	10.8	60.2	N30	04	19	04	51	05	18	08	04	09	10	10	13	11	13	
	21	132	16.2	..	14.5	91	05.1	8.2	7	42.6	10.8	60.1	N35	04	04	04	38	05	07	07	59	09	07	10	12	11	15	
	22	147	16.0		14.0	105	32.3	8.4	7	31.8	10.8	60.1	N40	03	44	04	23	04	54	07	53	09	04	10	12	11	17	
23	162	15.8		13.5	119	59.7	8.4	7	21.0	10.9	60.1	N45	03	19	04	04	04	39	07	47	09	00	10	11	11	20		
F R I D A Y	00	177	15.6	S20	12.9	134	27.1	8.5	S	7	10.1	10.9	60.0	S50	02	45	03	40	04	21	07	38	08	56	10	11	11	23
	01	192	15.4		12.4	148	54.6	8.6	6	59.2	10.9	60.0	S52	02	26	03	28	04	12	07	34	08	54	10	10	11	24	
	02	207	15.2		11.9	163	22.2	8.7	6	48.3	11.0	60.0	S54	02	03	03	15	04	02	07	30	08	52	10	10	11	26	
	03	222	15.0	..	11.3	177	49.9	8.7	6	37.3	10.9	59.9	S56	01	30	02	58	03	51	07	26	08	49	10	10	11	27	
	04	237	14.8		10.8	192	17.6	8.7	6	26.4	11.0	59.9	S58	////	02	39	03	38	07	20	08	46	10	09	11	29		
	05	252	14.7		10.2	206	45.3	8.9	6	15.4	11.1	59.9	S60	////	02	13	03	23	07	14	08	43	10	09	11	31		
	06	267	14.5	S20	09.7	221	13.2	8.9	S	6	04.3	11.0	59.8															
	07	282	14.3		09.2	235	41.1	9.0	5	53.3	11.1	59.8																
	08	297	14.1		08.6	250	09.1	9.1	5	42.2	11.1	59.7																
	09	312	13.9	..	08.1	264	37.2	9.1	5	31.1	11.1	59.7																
	10	327	13.7		07.6	279	05.3	9.2	5	20.0	11.1	59.7																
	11	342	13.6		07.0	293	33.5	9.2	5	08.9	11.1	59.6																
	12	357	13.4	S20	06.5	308	01.7	9.4	S	4	57.8	11.2	59.6															
	13	12	13.2		05.9	322	30.1	9.3	4	46.6	11.1	59.6	N68	14	12	15	42	16	58	19	29	21	13	22	53	24	28	
	14	27	13.0		05.4	336	58.4	9.5	4	35.5	11.2	59.5	N66	14	45	15	59	17	07	19	38	21	16	22	51	24	22	
	15	42	12.8	..	04.8	351	26.9	9.5	4	24.3	11.2	59.5	N64	15	09	16	12	17	15	19	45	21	19	22	50	24	17	
	16	57	12.6		04.3	5	55.4	9.6	4	13.1	11.2	59.4	N62	15	28	16	24	17	21	19	51	21	22	22	49	24	13	
	17	72	12.5		03.7	20	24.0	9.6	4	01.9	11.2	59.4	N60	15	43	16	34	17	27	19	56	21	24	22	48	24	09	
	18	87	12.3	S20	03.2	34	52.6	9.7	S	3	50.7	11.2	59.4	N58	15	56	16	43	17	33	20	01	21	26	22	48	24	06
	19	102	12.1		02.7	49	21.3	9.8	3	39.5	11.2	59.3	N56	16	07	16	51	17	38	20	05	21	27	22	47	24	03	
	20	117	11.9		02.1	63	50.1	9.8	3	28.3	11.2	59.3	N54	16	17	16	58	17	42	20	09	21	29	22	46	24	01	
	21	132	11.7	..	01.6	78	18.9	9.9	3	17.1	11.3	59.2	N52	16	26	17	05	17	46	20	12	21	30	22	46	23	58	
	22	147	11.5		01.0	92	47.8	9.9	3	05.8	11.2	59.2	N50	16	34	17	10	17	50	20	15	21	32	22	45	23	56	
	23	162	11.4	20	00.5	107	16.7	10.0	2	54.6	11.2	59.2	N45	16	51	17	23	17	59	20	22	21	34	22	44	23	51	
S A T U R D A Y	00	177	11.2	S19	59.9	121	45.7	10.0	S	2	43.4	11.2	59.1	N40	17	05	17	34	18	07	20	27	21	36	22	43	23	47
	01	192	11.0		59.4	136	14.7	10.2	2	32.2	11.3	59.1	N35	17	16	17	44	18	14	20	32	21	38	22	42	23	44	
	02	207	10.8		58.8	150	43.9	10.1	2	20.9	11.2	59.1	N30	17	27	17	52	18	21	20	36	21	40	22	42	23	41	
	03	222	10.6	..	58.3	165	13.0	10.2	2	09.7	11.2	59.0	N20	17	44	18	08	18	35	20	43	21	43	22	40	23	36	
	04	237	10.5		57.7	179	42.2	10.3	1	58.5	11.2	59.0	N10	18	00	18	22	18	48	20	49	21	45	22	39	23	31	
	05	252	10.3		57.2	194	11.5	10.3	1	47.3	11.2	58.9	N0	18	15	18	37	19	02	20	55	21	48	22	38	23	27	
	06	267	10.1	S19	56.6	208	40.8	10.4	S	1	36.1	11.2	58.9	S10	18	30	18	52	19	18	21	00	21	50	22	37	23	23
	07	282	9.9		56.0	223	10.2	10.5	1	24.9	11.2	58.9	N20	18	46	19	09	19	38	21	07	21	52	22	36	23	18	
	08	297	9.8		55.5	237	39.7	10.4	1	13.7	11.2	58.8	N30	19	04	19	30	20	02	21	13	21	55	22	35	23	13	
	09	312	9.6	..	54.9	252	09.1	10.6	1	02.5	11.1																	

	ARIES	VENUS -4.0	MARS -0.8	JUPITER -1.4	SATURN +0.7	STARS			
G.M.T.	G.H.A.	G.H.A. Dec.	G.H.A. Dec.	G.H.A. Dec.	G.H.A. Dec.	Name	S.H.A.	Dec.	
d h									
SUNDAY	2200	121 06.2	131 34.8 S 4 43.4	29 25.9 N27 12.1	190 32.9 S22 13.4	187 17.1 S21 32.9	Acamar	315 48.3 S 40 28.0	
	01	136 08.7	146 34.9 42.2	44 29.0 12.1	205 34.7 13.3	202 19.2 32.9	Achernar	335 56.3 S 57 26.4	
	02	151 11.2	161 35.0 40.9	59 32.0 12.1	220 36.6 13.2	217 21.4 32.8	Acrux	173 53.2 S 62 52.7	
	03	166 13.6	176 35.1 .. 39.7	74 35.0 .. 12.0	235 38.4 .. 13.2	232 23.5 .. 32.8	Adhara	255 43.3 S 28 55.3	
	04	181 16.1	191 35.3 38.4	89 38.0 12.0	250 40.3 13.1	247 25.7 32.7	Aldebaran	291 34.6 N 16 25.8	
	05	196 18.5	206 35.4 37.2	104 41.0 12.0	265 42.1 13.0	262 27.8 32.7			
	06	211 21.0	221 35.5 S 4 36.0	119 44.1 N27 12.0	280 44.0 S22 12.9	277 30.0 S21 32.6	Alioth	166 55.3 N 56 10.0	
	07	226 23.5	236 35.6 34.7	134 47.1 12.0	295 45.8 12.9	292 32.1 32.6	Alkaid	153 30.1 N 49 30.2	
	08	241 25.9	251 35.7 33.5	149 50.1 11.9	310 47.7 12.8	307 34.3 32.6	Al Na'ir	28 33.8 S 47 09.2	
	09	256 28.4	266 35.8 .. 32.2	164 53.1 .. 11.9	325 49.5 .. 12.7	322 36.4 .. 32.5	Alnilam	276 26.3 S 1 13.7	
	10	271 30.9	281 35.9 31.0	179 56.1 11.9	340 51.4 12.6	337 38.6 32.5	Alphard	218 34.6 S 8 29.4	
	11	286 33.3	296 36.0 29.7	194 59.1 11.9	355 53.2 12.6	352 40.7 32.4			
	12	301 35.8	311 36.1 S 4 28.5	210 02.1 N27 11.8	10 55.1 S22 12.5	7 42.9 S21 32.4	Alphecca	126 44.7 N 26 50.6	
	13	316 38.3	326 36.2 27.2	225 05.1 11.8	25 56.9 12.4	22 45.0 32.3	Alpheratz	358 24.6 N 28 52.6	
	14	331 40.7	341 36.4 26.0	240 08.2 11.8	40 58.8 12.3	37 47.2 32.3	Altair	62 47.2 N 8 45.9	
	15	346 43.2	356 36.5 .. 24.7	255 11.2 .. 11.8	56 00.6 .. 12.2	52 49.3 .. 32.3	Ankaa	353 54.9 S 42 31.3	
	16	1 45.7	11 36.6 23.5	270 14.2 11.7	71 02.5 12.2	67 51.5 32.2	Antares	113 15.1 S 26 20.6	
	17	16 48.1	26 36.7 22.2	285 17.2 11.7	86 04.3 12.1	82 53.7 32.2			
	18	31 50.6	41 36.8 S 4 21.0	300 20.2 N27 11.7	101 06.2 S22 12.0	97 55.8 S21 32.1	Arcturus	146 31.9 N 19 23.0	
	19	46 53.0	56 36.9 19.8	315 23.2 11.7	116 08.0 11.9	112 58.0 32.1	Avior	108 52.8 S 68 57.2	
	20	61 55.5	71 37.1 18.5	330 26.2 11.6	131 09.9 11.9	128 00.1 32.0	Bellatrix	234 33.5 S 59 23.1	
	21	76 58.0	86 37.2 .. 17.3	345 29.1 .. 11.6	146 11.7 .. 11.8	143 02.3 .. 32.0	Betelgeuse	279 14.2 N 6 18.7	
	22	92 00.4	101 37.3 16.0	0 32.1 11.6	161 13.6 11.7	158 04.4 31.9			
	23	107 02.9	116 37.4 14.8	15 35.1 11.6	176 15.4 11.6	173 06.6 31.9			
MONDAY	2300	122 05.4	131 37.5 S 4 13.5	30 38.1 N27 11.5	191 17.2 S22 11.6	188 08.7 S21 31.9	Canopus	264 13.2 S 52 40.7	
	01	137 07.8	146 37.7 12.3	45 41.1 11.5	206 19.1 11.5	203 10.9 31.8	Capella	281 32.6 N 45 07.6	
	02	152 10.3	161 37.8 11.0	60 44.1 11.5	221 20.9 11.4	218 13.0 31.8	Deneb	49 58.9 N 45 58.5	
	03	167 12.8	176 37.9 .. 09.8	75 47.1 .. 11.5	236 22.8 .. 11.3	233 15.2 .. 31.7	Denebola	183 13.8 N 14 47.3	
	04	182 15.2	191 38.0 08.5	90 50.1 11.4	251 24.6 11.3	248 17.3 31.7	Diphda	349 35.7 S 18 12.2	
	05	197 17.7	206 38.2 07.3	105 53.0 11.4	266 26.5 11.2	263 19.5 31.6			
	06	212 20.2	221 38.3 S 4 06.0	120 56.0 N27 11.4	281 28.3 S22 11.1	278 21.6 S21 31.6	Dubhe	194 39.8 N 61 57.5	
	07	227 22.6	236 38.4 04.8	135 59.0 11.4	296 30.2 11.0	293 23.8 31.5	Elnath	279 02.4 N 28 34.5	
	08	242 25.1	251 38.6 03.5	151 02.0 11.3	311 32.0 10.9	308 25.9 31.5	Eltanin	91 05.0 N 51 29.5	
	09	257 27.5	266 38.7 .. 02.3	166 05.0 .. 11.3	326 33.9 .. 10.9	323 28.1 .. 31.5	Enif	34 26.3 N 9 41.7	
	10	272 30.0	281 38.8 01.0	181 07.9 11.3	341 35.7 10.8	338 30.3 31.4	Fomalhaut	16 07.9 S 29 49.9	
	11	287 32.5	296 38.9 3 59.8	196 10.9 11.3	356 37.6 10.7	353 32.4 31.4			
	12	302 34.9	311 39.1 S 3 58.6	211 13.9 N27 11.2	11 39.4 S22 10.6	8 34.6 S21 31.3	Gacrux	172 44.7 S 56 53.5	
	13	317 37.4	326 39.2 57.3	226 16.8 11.2	26 41.3 10.6	23 36.7 31.3	Gienah	176 32.9 S 17 19.5	
	14	332 39.9	341 39.3 56.1	241 19.8 11.2	41 43.1 10.5	38 38.9 31.2	Hadar	149 44.0 S 60 10.8	
	15	347 42.3	356 39.5 .. 54.8	256 22.8 .. 11.1	56 45.0 .. 10.4	53 41.0 .. 31.2	Hamal	328 45.4 N 23 16.7	
	16	2 44.8	11 39.6 53.6	271 25.7 11.1	71 46.8 10.3	68 43.2 31.1	Kaus Aust.	84 36.7 S 34 24.1	
	17	17 47.3	26 39.7 52.3	286 28.7 11.1	86 48.7 10.2	83 45.3 31.1			
	18	32 49.7	41 39.9 S 3 51.1	301 31.7 N27 11.1	101 50.5 S22 10.2	98 47.5 S21 31.1	Kochab	137 18.7 N 74 18.7	
	19	47 52.2	56 40.0 49.8	316 34.6 11.0	116 52.4 10.1	113 49.6 31.0	Markab	14 18.0 N 14 59.7	
	20	62 54.7	71 40.1 48.6	331 37.6 11.0	131 54.2 10.0	128 51.8 31.0	Menkar	314 56.4 N 3 56.1	
	21	77 57.1	86 40.3 .. 47.3	346 40.6 .. 11.0	146 56.1 .. 09.9	143 53.9 .. 30.9	Menkent	148 54.3 S 36 10.5	
	22	92 59.6	101 40.4 46.1	1 43.5 11.0	161 57.9 09.9	158 56.1 30.9	Miaplacidus	221 47.1 S 69 33.4	
	23	108 02.0	116 40.6 44.8	16 46.5 10.9	176 59.8 09.8	173 58.2 30.8			
TUESDAY	2400	123 04.5	131 40.7 S 3 43.6	31 49.4 N27 10.9	192 01.6 S22 09.7	189 00.4 S21 30.8	Mirfak	309 36.9 N 49 43.5	
	01	138 07.0	146 40.8 42.3	46 52.4 10.9	207 03.5 09.6	204 02.6 30.7	Nunki	76 47.7 S 26 20.7	
	02	153 09.4	161 41.0 41.1	61 55.3 10.8	222 05.3 09.5	219 04.7 30.7	Peacock	54 22.2 S 56 51.7	
	03	168 11.9	176 41.1 .. 39.8	76 58.3 .. 10.8	237 07.2 .. 09.5	234 06.9 .. 30.6	Pollux	244 15.7 N 28 07.1	
	04	183 14.4	191 41.3 38.6	92 01.2 10.8	252 09.0 09.4	249 09.0 30.6	Procyon	245 40.8 N 5 19.4	
	05	198 16.8	206 41.4 37.3	107 04.2 10.8	267 10.9 09.3	264 11.2 30.6			
	06	213 19.3	221 41.6 S 3 36.1	122 07.1 N27 10.7	282 12.7 S22 09.2	279 13.3 S21 30.5	Rasalhague	96 43.5 N 12 35.2	
	07	228 21.8	236 41.7 34.8	137 10.0 10.7	297 14.6 09.1	294 15.5 30.5	Regulus	208 25.3 N 12 09.4	
	08	243 24.2	251 41.9 33.6	152 13.0 10.7	312 16.4 09.1	309 17.6 30.4	Rigel	281 49.8 S 8 15.0	
	09	258 26.7	266 42.0 .. 32.3	167 15.9 .. 10.6	327 18.3 .. 09.0	324 19.8 .. 30.4	Rigel Kent.	140 45.9 S 60 40.1	
	10	273 29.1	281 42.1 31.1	182 18.9 10.6	342 20.1 08.9	339 21.9 30.3	Sabik	102 58.2 S 15 40.5	
	11	288 31.6	296 42.3 29.8	197 21.8 10.6	357 22.0 08.8	354 24.1 30.3			
	12	303 34.1	311 42.4 S 3 28.6	212 24.7 N27 10.5	12 23.8 S22 08.8	9 26.2 S21 30.3	Schedar	350 25.8 N 56 19.6	
	13	318 36.5	326 42.6 27.4	227 27.7 10.5	27 25.7 08.7	24 28.4 30.2	Shaula	97 16.0 S 37 04.4	
	14	333 39.0	341 42.7 26.1	242 30.6 10.5	42 27.5 08.6	39 30.6 30.2	Sirius	259 08.3 S 16 39.9	
	15	348 41.5	356 42.9 .. 24.9	257 33.5 .. 10.5	57 29.4 .. 08.5	54 32.7 .. 30.1	Spica	159 12.9 S 10 57.5	
	16	3 43.9	11 43.1 23.6	272 36.4 10.4	72 31.2 08.4	69 34.9 30.1	Suhail	223 21.1 S 43 16.5	
	17	18 46.4	26 43.2 22.4	287 39.4 10.4	87 33.1 08.4	84 37.0 30.0			
	18	33 48.9	41 43.4 S 3 21.1	302 42.3 N27 10.4	102 34.9 S22 08.3	99 39.2 S21 30.0	Vega	81 06.1 N 38 44.8	
	19	48 51.3	56 43.5 19.9	317 45.2 10.3	117 36.8 08.2	114 41.3 29.9	Zuben'ubi	137 49.3 S 15 52.7	
	20	63 53.8	71 43.7 18.6	332 48.1 10.3	132 38.7 08.1	129 43.5 29.9			
	21	78 56.3	86 43.8 .. 17.4	347 51.0 .. 10.3	147 40.5 .. 08.1	144 45.6 .. 29.9		S.H.A.	Mer. Pass.
	22	93 58.7	101 44.0 16.1	2 54.0 10.2	162 42.4 08.0	159 47.8 29.8	Venus	9 32.1 15 13	
	23	109 01.2	116 44.1 14.9	17 56.9 10.2	177 44.2 07.9	174 49.9 29.8	Mars	268 32.7 21 53	
						Jupiter	69 11.8 11 13		
						Saturn	66 03.3 11 26		
Mer. Pass. 15 49.0		v 0.1 d 1.2	v 3.0 d 0.0	v 1.8 d 0.1	v 2.2 d 0.0				

G.M.T.	SUN		MOON					Lat.	Twilight		Sun-rise	Moonrise			
	G.H.A.	Dec.	G.H.A.	φ	Dec.	d'	H.P.		Naut.	Civil		22	23	24	25
d h	$^{\circ}$	$^{\circ}$	$^{\circ}$		$^{\circ}$	$^{\circ}$		$^{\circ}$	$^{\circ}$	$^{\circ}$	$^{\circ}$	$^{\circ}$	$^{\circ}$	$^{\circ}$	$^{\circ}$
22 00 01 02 03 04 05 06 07 08 09 10 11 12 13 14 15 16 17 18 19 20 21 22 23	SUNDAY	177 07.0	S19 46.5	109 37.1	11.2	N 1 43.4	10.9	58.2	N 72	07 40	09 19	10 19	10 13	10 06	09 58
		192 06.8	46.0	124 07.3	11.3	1 54.3	10.8	58.1	N 70	07 28	08 53	10 42	10 24	10 23	10 24
		207 06.6	45.4	138 37.6	11.3	2 05.1	10.9	58.1	68	07 18	08 33	09 57	10 28	10 32	10 38
		222 06.5	44.8	153 07.9	11.3	2 16.0	10.8	58.1	66	07 10	08 17	09 28	10 31	10 40	10 50
		237 06.3	44.3	167 38.2	11.3	2 26.8	10.8	58.0	64	07 03	08 04	09 06	10 34	10 46	11 00
		252 06.1	43.7	182 08.5	11.4	2 37.6	10.7	58.0	62	06 57	07 53	08 48	10 36	10 51	11 08
		267 05.9	S19 43.1	196 38.9	11.5	N 2 48.3	10.8	57.9	60	06 51	07 44	08 34	10 38	10 56	11 16
		282 05.8	42.6	211 09.4	11.5	2 59.1	10.7	57.9	N 58	06 46	07 35	08 22	10 40	11 00	11 22
		297 05.6	42.0	225 39.9	11.5	3 09.8	10.6	57.9	56	06 42	07 28	08 11	10 42	11 04	11 28
		312 05.4	41.4	240 10.4	11.5	3 20.4	10.7	57.8	54	06 37	07 21	08 01	10 43	11 08	11 33
		327 05.3	40.8	254 40.9	11.6	3 31.1	10.6	57.8	52	06 33	07 15	07 53	10 45	11 11	11 38
		342 05.1	40.3	269 11.5	11.6	3 41.7	10.5	57.7	50	06 30	07 09	07 45	10 46	11 13	11 42
		357 04.9	S19 39.7	283 42.1	11.6	N 3 52.2	10.6	57.7	45	06 21	06 57	07 29	10 49	11 20	11 51
		12 04.8	39.1	298 12.7	11.7	4 02.8	10.5	57.7	N 40	06 14	06 47	07 16	10 51	11 25	11 59
		27 04.6	38.5	312 43.4	11.6	4 13.3	10.4	57.6	35	06 07	06 38	07 05	10 53	11 29	12 06
		42 04.4	38.0	327 14.0	11.8	4 23.7	10.5	57.6	30	06 00	06 29	06 55	10 55	11 33	12 12
		57 04.3	37.4	341 44.8	11.7	4 34.2	10.3	57.5	20	05 47	06 14	06 38	10 58	11 40	12 22
		72 04.1	36.8	356 15.5	11.8	4 44.5	10.4	57.5	N 10	05 35	06 00	06 22	11 01	11 46	12 31
		87 03.9	S19 36.2	10 46.3	11.8	N 4 54.9	10.3	57.5	0	05 21	05 46	06 08	11 04	11 52	12 39
		102 03.8	35.7	25 17.1	11.8	5 05.2	10.3	57.4	S 10	05 05	05 32	05 54	11 07	11 58	12 48
		117 03.6	35.1	39 47.9	11.9	5 15.5	10.2	57.4	20	04 46	05 15	05 38	11 10	12 04	12 57
		132 03.4	34.5	54 18.8	11.9	5 25.7	10.2	57.4	30	04 22	04 54	05 20	11 13	12 11	13 08
		147 03.3	33.9	68 49.7	11.9	5 35.9	10.1	57.3	35	04 07	04 42	05 10	11 15	12 15	13 14
		162 03.1	33.4	83 20.6	11.9	5 46.0	10.1	57.3	40	03 49	04 27	04 58	11 17	12 20	13 20
		177 02.9	S19 32.8	97 51.5	11.9	N 5 56.1	10.1	57.2	45	03 25	04 09	04 43	11 20	12 25	13 29
23 00 01 02 03 04 05 06 07 08 09 10 11 12 13 14 15 16 17 18 19 20 21 22 23	MONDAY	192 02.8	32.2	112 22.4	12.0	6 06.2	10.0	57.2	S 50	02 52	03 46	04 26	11 23	12 32	13 38
		207 02.6	31.6	126 53.4	12.0	6 16.2	10.0	57.2	52	02 44	03 35	04 17	11 24	12 35	13 43
		222 02.5	31.0	141 24.4	12.0	6 26.2	9.9	57.1	54	02 13	03 22	04 08	11 26	12 38	13 48
		237 02.3	30.4	155 55.4	12.1	6 36.1	9.9	57.1	56	01 44	03 06	03 58	11 27	12 42	13 54
		252 02.1	29.9	170 26.5	12.0	6 46.0	9.8	57.1	58	00 53	02 48	03 45	11 29	12 46	14 00
		267 02.0	S19 29.3	184 57.5	12.1	N 6 55.8	9.8	57.0	S 60	///	02 25	03 31	11 31	12 51	14 07
		282 01.8	28.7	199 28.6	12.1	7 05.6	9.8	57.0							
		297 01.7	28.1	213 59.7	12.1	7 15.4	9.7	56.9	Lat.	Sun-set	Twilight	Moonset			
		312 01.5	27.5	228 30.8	12.1	7 25.1	9.6	56.9			Civil	22	23	24	25
		327 01.3	26.9	243 01.9	12.2	7 34.7	9.6	56.9	$^{\circ}$	$^{\circ}$	$^{\circ}$	$^{\circ}$	$^{\circ}$	$^{\circ}$	$^{\circ}$
		342 01.2	26.3	257 33.1	12.1	7 44.3	9.5	56.8	N 72	15 06	16 45	24 44	00 44	02 31	04 17
		357 01.0	S19 25.8	272 04.2	12.2	N 7 53.8	9.5	56.8	N 70	13 43	15 32	16 57	24 36	00 36	02 14
		12 00.9	25.2	286 35.4	12.2	8 03.3	9.5	56.8	68	14 27	15 51	17 06	24 28	00 28	02 01
		27 00.7	24.6	301 06.6	12.2	8 12.8	9.4	56.7	66	14 57	16 07	17 15	24 22	00 22	01 50
		42 00.5	24.0	315 37.8	12.2	8 22.2	9.3	56.7	64	15 19	16 20	17 22	24 17	00 17	01 41
		57 00.4	23.4	330 09.0	12.2	8 31.5	9.3	56.7	62	15 36	16 31	17 28	24 13	00 13	01 34
		72 00.2	22.8	344 40.2	12.3	8 40.8	9.2	56.6	60	15 51	16 41	17 33	24 09	00 09	01 27
		87 00.1	S19 22.2	359 11.5	12.2	N 8 50.0	9.2	56.6	N 58	16 03	16 49	17 38	24 06	00 06	01 21
		101 59.9	21.6	13 42.7	12.3	8 59.2	9.1	56.6	56	16 13	16 57	17 43	24 03	00 03	01 16
		116 59.8	21.0	28 14.0	12.3	9 08.3	9.1	56.5	54	16 23	17 03	17 47	24 01	00 01	01 12
		131 59.6	20.4	42 45.3	12.3	9 17.4	9.0	56.5	52	16 31	17 09	17 51	23 58	25 08	01 08
		146 59.4	19.8	57 16.6	12.2	9 26.4	8.9	56.5	50	16 39	17 15	17 54	23 56	25 04	01 04
		161 59.3	19.2	71 47.8	12.4	9 35.3	8.9	56.4	45	16 55	17 27	18 03	23 51	24 56	00 56
24 00 01 02 03 04 05 06 07 08 09 10 11 12 13 14 15 16 17 18 19 20 21 22 23	TUESDAY	176 59.1	S19 18.6	86 19.2	12.3	N 9 44.2	8.9	56.4	N 40	17 08	17 37	18 10	23 47	24 49	00 49
		191 59.0	18.1	100 50.5	12.3	9 53.1	8.8	56.4	35	17 19	17 46	18 17	23 44	24 43	00 43
		206 58.8	17.5	115 21.8	12.3	10 01.9	8.7	56.3	30	17 29	17 55	18 24	23 41	24 39	00 39
		221 58.7	16.9	129 53.1	12.4	10 10.6	8.6	56.3	20	17 46	18 10	18 36	23 36	24 30	00 30
		236 58.5	16.3	144 24.5	12.3	10 19.2	8.7	56.3	N 10	18 01	18 24	18 49	23 31	24 22	00 22
		251 58.4	15.7	158 55.8	12.3	10 27.9	8.5	56.2	0	18 15	18 37	19 03	23 27	24 15	00 15
		266 58.2	S19 15.1	173 27.1	12.4	N 10 36.4	8.5	56.2	S 10	18 30	18 52	19 18	23 23	24 08	00 08
		281 58.1	14.5	187 58.5	12.4	10 44.9	8.4	56.2	20	18 45	19 09	19 37	23 18	24 00	00 00
		296 57.9	13.9	202 29.9	12.3	10 53.3	8.4	56.1	30	19 03	19 29	20 01	23 13	23 51	24 30
		311 57.8	13.3	217 01.2	12.4	11 01.7	8.3	56.1	35	19 13	19 42	20 16	23 10	23 46	24 23
		326 57.6	12.7	231 32.6	12.4	11 10.0	8.2	56.1	40	19 25	19 56	20 34	23 07	23 40	24 16
		341 57.5	12.1	246 04.0	12.4	11 18.2	8.2	56.0	45	19 40	20 14	20 58	23 03	23 34	24 07
		356 57.3	S19 11.5	260 35.4	12.3	N 11 26.4	8.1	56.0	S 50	19 57	20 37	21 30	22 58	23 26	23 56
		11 57.2	10.9	275 06.7	12.4	11 34.5	8.0	56.0	52	20 05	20 48	21 47	22 56	23 22	23 51
		26 57.0	10.2	289 38.1	12.4	11 42.5	8.0	55.9	54	20 14	21 01	22 08	22 54	23 18	23 45
		41 56.9	09.6	304 09.5	12.4	11 50.5	7.9	55.9	56	20 25	21 16	22 36	22 51	23 14	23 39
		56 56.7	09.0	318 40.9	12.4	11 58.4	7.9	55.9	58	20 37	21 34	22 32	22 48	23 09	23 32
		71 56.6	08.4	333 12.3	12.4	12 06.3	7.8	55.9	S 60	20 51	21 56	///	22 45	23 04	23 25
		86 56.4	S19 07.8	347 43.7	12.4	N 12 14.1	7.7	55.8							
		101 56.3	07.2	2 15.1	12.4	12 21.8	7.7	55.8	Day	SUN	Mer.	MOON			
		116 56.1	06.6	16 46.5	12.4	12 29.5	7.6	55.8	Eqn. of Time	12h	Pass.	Mer. Upper	Pass. Lower	Age	Phase
		131 56.0	06.0	31 17.9	12.4	12 37.1	7.5	55.7	m s	m s	h m	h m	h m	d	
		146 55.8	05.4	45 49.3	12.3	12 44.6	7.4	55.7	22	11 32	11 40	12 12	17 15	04 51	06

G.M.T.	ARIES		VENUS -4.0		MARS -0.7		JUPITER -1.4		SATURN +0.8		STARS		
	G.H.A.		G.H.A.	Dec.	G.H.A.	Dec.	G.H.A.	Dec.	G.H.A.	Dec.	Name	S.H.A.	Dec.
d h	° ' "		° ' "	° ' "	° ' "	° ' "	° ' "	° ' "	° ' "	° ' "		° ' "	° ' "
25	00	124 03.6	131 44.3 S	3 13.6	32 59.8 N	27 10.2	192 46.1 S	22 07.8	189 52.1 S	21 29.7	Acamar	315 48.3	S 40 28.0
	01	139 06.1	146 44.5	12.4	48 02.7	10.2	207 47.9	07.7	204 54.2	29.7	Achernar	335 56.4	S 57 26.4
	02	154 08.6	161 44.6	11.1	63 05.6	10.1	222 49.8	07.7	219 56.4	29.6	Acrux	173 53.1	S 62 52.7
	03	169 11.0	176 44.8	09.9	78 08.5	10.1	237 51.6	07.6	234 58.6	29.6	Adhara	255 43.3	S 28 55.3
	04	184 13.5	191 44.9	08.6	93 11.4	10.1	252 53.5	07.5	250 00.7	29.5	Aldebaran	291 34.6	N 16 25.8
	05	199 16.0	206 45.1	07.4	108 14.3	10.0	267 55.3	07.4	265 02.9	29.5			
WEDNESDAY	06	214 18.4	221 45.3 S	3 06.1	123 17.2 N	27 10.0	282 57.2 S	22 07.3	280 05.0 S	21 29.5	Alioth	166 55.3	N 56 10.0
	07	229 20.9	236 45.4	04.9	138 20.1	10.0	297 59.0	07.3	295 07.2	29.4	Alkaid	153 30.0	N 49 30.2
	08	244 23.4	251 45.6	03.6	153 23.0	09.9	313 00.9	07.2	310 09.3	29.4	Al Na'ir	28 33.9	S 47 09.1
	09	259 25.8	266 45.8	02.4	168 25.9	09.9	328 02.7	07.1	325 11.5	29.3	Alnilam	276 26.3	S 1 13.7
	10	274 28.3	281 45.9	01.1	183 28.8	09.9	343 04.6	07.0	340 13.6	29.3	Alphard	218 34.6	S 8 29.5
	11	289 30.7	296 46.1	2 59.9	198 31.7	09.8	358 06.4	07.0	355 15.8	29.2			
	12	304 33.2	311 46.3 S	2 58.6	213 34.6 N	27 09.8	13 08.3 S	22 06.9	10 17.9 S	21 29.2	Alphecca	126 44.7	N 26 50.6
	13	319 35.7	326 46.4	57.4	228 37.5	09.8	28 10.1	06.8	25 20.1	29.1	Alpheratz	358 24.7	N 28 52.6
	14	334 38.1	341 46.6	56.1	243 40.4	09.7	43 12.0	06.7	40 22.3	29.1	Altair	62 47.2	N 8 45.9
	15	349 40.6	356 46.8	54.9	258 43.3	09.7	58 13.8	06.6	55 24.4	29.0	Ankaa	353 55.0	S 42 31.3
THURSDAY	16	4 43.1	11 46.9	53.6	273 46.2	09.7	73 15.7	06.6	70 26.6	29.0	Antares	113 15.0	S 26 20.6
	17	19 45.5	26 47.1	52.4	288 49.1	09.6	88 17.5	06.5	85 28.7	29.0			
	18	34 48.0	41 47.3 S	2 51.1	303 52.0 N	27 09.6	103 19.4 S	22 06.4	100 30.9 S	21 28.9	Arcturus	146 31.8	N 19 23.0
	19	49 50.5	56 47.5	49.9	318 54.9	09.6	118 21.2	06.3	115 33.0	28.9	Atria	108 52.7	S 68 57.1
	20	64 52.9	71 47.6	48.6	333 57.7	09.5	133 23.1	06.2	130 35.2	28.8	Avior	234 33.5	S 59 23.1
	21	79 55.4	86 47.8	47.4	349 00.6	09.5	148 24.9	06.2	145 37.3	28.8	Bellatrix	279 14.2	N 6 18.7
	22	94 57.9	101 48.0	46.1	4 03.5	09.5	163 26.8	06.1	160 39.5	28.7	Betelgeuse	271 43.9	N 7 23.9
	23	110 00.3	116 48.2	44.9	19 06.4	09.4	178 28.6	06.0	175 41.7	28.7			
	00	125 02.8	131 48.3 S	2 43.6	34 09.3 N	27 09.4	193 30.5 S	22 05.9	190 43.8 S	21 28.6	Canopus	264 13.2	S 52 40.7
	01	140 05.2	146 48.5	42.4	49 12.1	09.4	208 32.4	05.8	205 46.0	28.6	Capella	281 32.6	N 45 57.6
FRIDAY	02	155 07.7	161 48.7	41.1	64 15.0	09.3	223 34.2	05.8	220 48.1	28.5	Deneb	49 58.9	N 45 08.5
	03	170 10.2	176 48.9	39.9	79 17.9	09.3	238 36.1	05.7	235 50.3	28.5	Denebola	183 13.8	N 14 47.3
	04	185 12.6	191 49.1	38.6	94 20.7	09.3	253 37.9	05.6	250 52.4	28.5	Diphda	349 35.7	S 18 12.2
	05	200 15.1	206 49.2	37.4	109 23.6	09.2	268 39.8	05.5	265 54.6	28.4			
	06	215 17.6	221 49.4 S	2 36.1	124 26.5 N	27 09.2	283 41.6 S	22 05.5	280 56.7 S	21 28.4	Dubhe	194 39.7	N 61 57.5
	07	230 20.0	236 49.6	34.9	139 29.3	09.2	298 43.5	05.4	295 58.9	28.3	Elnath	279 02.4	N 28 34.5
	08	245 22.5	251 49.8	33.7	154 32.2	09.1	313 45.3	05.3	311 01.0	28.3	Eltanin	91 05.0	N 51 29.5
	09	260 25.0	266 50.0	32.4	169 35.1	09.1	328 47.2	05.2	326 03.2	28.2	Enif	34 26.3	N 9 41.7
	10	275 27.4	281 50.2	31.2	184 37.9	09.1	343 49.0	05.1	341 05.4	28.2	Fomalhaut	16 07.9	S 29 49.9
	11	290 29.9	296 50.3	29.9	199 40.8	09.0	358 50.9	05.1	356 07.5	28.1			
SATURDAY	12	305 32.4	311 50.5 S	2 28.7	214 43.6 N	27 09.0	13 52.7 S	22 05.0	11 09.7 S	21 28.1	Gacrux	172 44.7	S 56 53.5
	13	320 34.8	326 50.7	27.4	229 46.5	09.0	28 54.6	04.9	26 11.8	28.1	Gienah	176 32.9	S 17 19.5
	14	335 37.3	341 50.9	26.2	244 49.4	08.9	43 56.4	04.8	41 14.0	28.0	Hadar	149 44.0	S 60 10.8
	15	350 39.7	356 51.1	24.9	259 52.2	08.9	58 58.3	04.7	56 16.1	28.0	Hamal	328 45.4	N 23 16.7
	16	5 42.2	11 51.3	23.7	274 55.1	08.8	74 00.2	04.7	71 18.3	27.9	Kaus Aust.	84 36.6	S 34 24.1
	17	20 44.7	26 51.5	22.4	289 57.9	08.8	89 02.0	04.6	86 20.4	27.9			
	18	35 47.1	41 51.7 S	2 21.2	305 00.8 N	27 08.8	104 03.9 S	22 04.5	101 22.6 S	21 27.8	Kochab	137 18.6	N 74 18.7
	19	50 49.6	56 51.8	19.9	320 03.6	08.7	119 05.7	04.4	116 24.8	27.8	Markab	14 18.0	N 14 59.7
	20	65 52.1	71 52.0	18.7	335 06.4	08.7	134 07.6	04.3	131 26.9	27.7	Menkar	314 56.4	N 3 56.1
	21	80 54.5	86 52.2	17.4	350 09.3	08.7	149 09.4	04.3	146 29.1	27.7	Menkent	148 54.2	S 36 10.5
SUNDAY	22	95 57.0	101 52.4	16.2	5 12.1	08.6	164 11.3	04.2	161 31.2	27.7	Miaplacidus	221 47.1	S 69 33.4
	23	110 59.5	116 52.6	14.9	20 15.0	08.6	179 13.1	04.1	176 33.4	27.6			
	00	126 01.9	131 52.8 S	2 13.7	35 17.8 N	27 08.6	194 15.0 S	22 04.0	191 35.5 S	21 27.6	Mirfak	309 36.9	N 49 43.5
	01	141 04.4	146 53.0	12.4	50 20.6	08.5	209 16.8	03.9	206 37.7	27.5	Nunki	76 47.7	S 26 20.7
	02	156 06.8	161 53.2	11.2	65 23.5	08.5	224 18.7	03.9	221 39.8	27.5	Peacock	54 22.2	S 56 51.7
	03	171 09.3	176 53.4	09.9	80 26.3	08.5	239 20.6	03.8	236 42.0	27.4	Pollux	244 15.7	N 28 07.1
	04	186 11.8	191 53.6	08.7	95 29.1	08.4	254 22.4	03.7	251 44.2	27.4	Procyon	245 40.8	N 5 19.4
	05	201 14.2	206 53.8	07.4	110 32.0	08.4	269 24.3	03.6	266 46.3	27.3			
	06	216 16.7	221 54.0 S	2 06.2	125 34.8 N	27 08.3	284 26.1 S	22 03.5	281 48.5 S	21 27.3	Rasalhague	96 43.4	N 12 35.2
	07	231 19.2	236 54.2	04.9	140 37.6	08.3	299 28.0	03.5	296 50.6	27.3	Regulus	208 25.3	N 12 09.4
MONDAY	08	246 21.6	251 54.4	03.7	155 40.4	08.3	314 29.8	03.4	311 52.8	27.2	Rigel	281 49.9	S 8 15.0
	09	261 24.1	266 54.6	02.4	170 43.3	08.2	329 31.7	03.3	326 54.9	27.2	Rigel Kent.	140 45.8	S 60 40.1
	10	276 26.6	281 54.8	01.2	185 46.1	08.2	344 33.5	03.2	341 57.1	27.1	Sabik	102 58.2	S 15 40.6
	11	291 29.0	296 55.0	1 59.9	200 48.9	08.2	359 35.4	03.1	356 59.3	27.1			
	12	306 31.5	311 55.2 S	1 58.7	215 51.7 N	27 08.1	14 37.2 S	22 03.1	12 01.4 S	21 27.0	Schedar	350 25.9	N 56 19.6
	13	321 34.0	326 55.4	57.4	230 54.6	08.1	29 39.1	03.0	27 03.6	27.0	Shaula	97 16.0	S 37 04.4
	14	336 36.4	341 55.6	56.2	245 57.4	08.0	44 41.0	02.9	42 05.7	26.9	Sirius	259 08.3	S 16 39.9
	15	351 38.9	356 55.8	55.0	261 00.2	08.0	59 42.8	02.8	57 07.9	26.9	Spica	159 12.9	S 10 57.5
	16	6 41.3	11 56.0	53.7	276 03.0	08.0	74 44.7	02.7	72 10.0	26.8	Suhail	223 21.1	S 43 16.5
	17	21 43.8	26 56.3	52.5	291 05.8	07.9	89 46.5	02.6	87 12.2	26.8			
TUESDAY	18	36 46.3	41 56.5 S	1 51.2	306 08.6 N	27 07.9	104 48.4 S	22 02.6	102 14.3 S	21 26.8	Vega	81 06.1	N 38 44.8
	19	51 48.7	56 56.7	50.0	321 11.4	07.9	119 50.2	02.5	117 16.5	26.7	Zuben'ubi	137 49.3	S 15 52.7
	20	66 51.2	71 56.9	48.7	336 14.2	07.8	134 52.1	02.4	132 18.7	26.7			
	21	81 53.7	86 57.1	47.5	351 17.0	07.8	149 53.9	02.3	147 20.8	26.6			
	22	96 56.1	101 57.3	46.2	6 19.8	07.7	164 55.8	02.2	162 23.0	26.6	Venus	6 45.5	15 13
	23	111 58.6	116 57.5	45.0	21 22.6	07.7	179 57.6	02.2	177 25.1	26.5	Mars	269 06.5	21 39
											Jupiter	68 27.7	11 05
											Saturn	65 41.0	11 15

Mer. Pass. 15 37.2

h m

v 0.2 d 1.2

v 2.9 d 0.0

v 1.9 d 0.1

v 2.2 d 0.0

G.M.T.	SUN				MOON				Lat.	Twilight		Sun-rise	Moonrise							
	G.H.A.		Dec.	H.P.	G.H.A.		v	Dec.		d	Naut.		Civil	25	26	27	28			
	°	'			°	'		°										'	°	'
25 00	176	55.5	S 19	04.2	74	52.0	12.4	N 12	59.4	7.3	55.7	N 72	07 30	09 06	11 43	09 58	09 47	09 19		
01	191	55.4		03.6	89	23.4	12.4		13	06.7	7.3	55.6	N 70	07 20	08 43	10 22	10 26	10 30	10 42	11 08
02	206	55.2		03.0	103	54.8	12.4		13	14.0	7.2	55.6	68	07 11	08 25	09 44	10 47	11 00	11 21	11 55
03	221	55.1		02.3	118	26.2	12.4		13	21.2	7.1	55.6	66	07 04	08 10	09 18	11 03	11 22	11 48	12 25
04	236	54.9		01.7	132	57.6	12.4		13	28.3	7.0	55.5	64	06 57	07 58	08 58	11 17	11 39	12 09	12 48
05	251	54.8		01.1	147	29.0	12.4		13	35.3	7.0	55.5	62	06 52	07 48	08 41	11 29	11 54	12 25	13 06
06	266	54.6	S 19	00.5	162	00.4	12.3	N 13	42.3	6.9	55.5	60	06 47	07 39	08 28	11 38	12 06	12 40	13 21	
07	281	54.5	18	59.9	176	31.7	12.4		13	49.2	6.8	55.5	N 58	06 42	07 31	08 16	11 47	12 16	12 52	13 34
08	296	54.4		59.3	191	03.1	12.4		13	56.0	6.8	55.4	56	06 38	07 24	08 06	11 55	12 26	13 02	13 44
09	311	54.2		58.7	205	34.5	12.3		14	02.8	6.7	55.4	54	06 34	07 17	07 57	12 02	12 34	13 11	13 55
10	326	54.1		58.0	220	05.8	12.4		14	09.5	6.6	55.4	52	06 30	07 11	07 49	12 08	12 41	13 19	14 03
11	341	53.9		57.4	234	37.2	12.4		14	16.1	6.5	55.4	50	06 27	07 06	07 42	12 13	12 48	13 27	14 11
12	356	53.8	S 18	56.8	249	08.6	12.3	N 14	22.6	6.5	55.3	45	06 19	06 55	07 26	12 25	13 02	13 43	14 28	
13	11	53.6		56.2	263	39.9	12.4		14	29.1	6.4	55.3	N 40	06 12	06 45	07 14	12 35	13 14	13 56	14 41
14	26	53.5		55.6	278	11.3	12.3		14	35.5	6.3	55.3	35	06 06	06 36	07 03	12 44	13 24	14 07	14 53
15	41	53.4		55.0	292	42.6	12.4		14	41.8	6.3	55.3	30	05 59	06 28	06 54	12 51	13 32	14 16	15 03
16	56	53.2		54.3	307	14.0	12.3		14	48.1	6.1	55.2	20	05 47	06 14	06 37	13 04	13 48	14 33	15 20
17	71	53.1		53.7	321	45.3	12.4		14	54.2	6.1	55.2	N 10	05 35	06 01	06 23	13 16	14 01	14 48	15 35
18	86	52.9	S 18	53.1	336	16.7	12.3	N 15	00.3	6.0	55.2	0	05 22	05 47	06 09	13 27	14 14	15 02	15 49	
19	101	52.8		52.5	350	48.0	12.3		15	06.3	6.0	55.2	S 10	05 07	05 33	05 55	13 38	14 27	15 16	16 04
20	116	52.7		51.8	5	19.3	12.3		15	12.3	5.9	55.1	20	04 49	05 17	05 40	13 49	14 40	15 30	16 19
21	131	52.5		51.2	19	50.6	12.3		15	18.2	5.8	55.1	30	04 26	04 57	05 23	14 02	14 56	15 47	16 37
22	146	52.4		50.6	34	21.9	12.3		15	24.0	5.7	55.1	35	04 11	04 45	05 13	14 10	15 05	15 57	16 46
23	161	52.2		50.0	48	53.2	12.3		15	29.7	5.6	55.1	40	03 53	04 31	05 01	14 19	15 15	16 08	16 58
													45	03 30	04 14	04 48	14 29	15 27	16 21	17 12
26 00	176	52.1	S 18	49.4	63	24.5	12.3	N 15	35.3	5.6	55.1	S 50	02 59	03 52	04 31	14 42	15 42	16 38	17 28	
01	191	52.0		48.7	77	55.8	12.3		15	40.9	5.5	55.0	52	02 43	03 41	04 23	14 48	15 49	16 45	17 36
02	206	51.8		48.1	92	27.1	12.3		15	46.4	5.4	55.0	54	02 23	03 29	04 14	14 54	15 57	16 54	17 45
03	221	51.7		47.5	106	58.4	12.3		15	51.8	5.3	55.0	56	01 57	03 14	04 04	15 02	16 05	17 03	17 55
04	236	51.5		46.8	121	29.7	12.3		15	57.1	5.3	55.0	58	01 18	02 57	03 53	15 10	16 15	17 14	18 06
05	251	51.4		46.2	136	01.0	12.2		16	02.4	5.1	55.0	S 60	///	02 36	03 39	15 19	16 26	17 27	18 19
06	266	51.3	S 18	45.6	150	32.2	12.3	N 16	07.5	5.1	54.9									
07	281	51.1		45.0	165	03.5	12.2		16	12.6	5.0	54.9	Lat.	Sun-set	Twilight	Moonset				
08	296	51.0		44.3	179	34.7	12.3		16	17.6	5.0	54.9			Civil	Naut.	25	26	27	28
09	311	50.9		43.7	194	06.0	12.2		16	22.6	4.8	54.9					h m	h m	h m	h m
10	326	50.7		43.1	208	37.2	12.3		16	27.4	4.8	54.8	N 72	12 43	15 21	16 56	04 17	06 07	08 14	
11	341	50.6		42.4	223	08.5	12.2		16	32.2	4.7	54.8	N 70	14 05	15 44	17 06	03 51	05 24	06 52	08 05
12	356	50.5	S 18	41.8	237	39.7	12.2	N 16	36.9	4.6	54.8	68	14 42	16 02	17 15	03 30	04 56	06 13	07 18	
13	11	50.3		41.2	252	10.9	12.2		16	41.5	4.6	54.8	66	15 08	16 16	17 22	03 15	04 34	05 46	06 48
14	26	50.2		40.5	266	42.1	12.3		16	46.1	4.4	54.8	64	15 28	16 28	17 29	03 02	04 17	05 26	06 25
15	41	50.1		39.9	281	13.4	12.2		16	50.5	4.4	54.8	62	15 45	16 39	17 34	02 51	04 03	05 09	06 07
16	56	49.9		39.3	295	44.6	12.2		16	54.9	4.3	54.7	60	15 58	16 47	17 39	02 41	03 51	04 55	05 52
17	71	49.8		38.6	310	15.8	12.2		16	59.2	4.2	54.7	N 58	16 10	16 55	17 44	02 33	03 41	04 44	05 39
18	86	49.7	S 18	38.0	324	47.0	12.1	N 17	03.4	4.1	54.7	56	16 20	17 02	17 48	02 26	03 32	04 33	05 28	
19	101	49.5		37.4	339	18.1	12.2		17	07.5	4.1	54.7	54	16 29	17 08	17 52	02 20	03 24	04 24	05 19
20	116	49.4		36.7	353	49.3	12.2		17	11.6	3.9	54.7	52	16 37	17 14	17 55	02 14	03 17	04 16	05 10
21	131	49.3		36.1	8	20.5	12.2		17	15.5	3.9	54.6	50	16 44	17 20	17 59	02 09	03 11	04 09	05 02
22	146	49.2		35.5	22	51.7	12.1		17	19.4	3.8	54.6	45	16 59	17 31	18 07	01 58	02 57	03 54	04 46
23	161	49.0		34.8	37	22.8	12.2		17	23.2	3.7	54.6	N 40	17 12	17 41	18 13	01 49	02 46	03 41	04 32
27 00	176	48.9	S 18	34.2	51	54.0	12.2	N 17	26.9	3.6	54.6	35	17 22	17 49	18 20	01 41	02 37	03 30	04 21	
01	191	48.8		33.5	66	25.2	12.1		17	30.5	3.6	54.6	30	17 32	17 57	18 26	01 34	02 29	03 21	04 11
02	206	48.6		32.9	80	56.3	12.2		17	34.1	3.5	54.6	20	17 48	18 11	18 38	01 22	02 14	03 05	03 54
03	221	48.5		32.3	95	27.5	12.1		17	37.6	3.3	54.6	N 10	18 03	18 25	18 50	01 12	02 01	02 50	03 39
04	236	48.4		31.6	109	58.6	12.1		17	40.9	3.3	54.5	0	18 16	18 38	19 03	01 02	01 49	02 37	03 25
05	251	48.3		31.0	124	29.7	12.2		17	44.2	3.2	54.5	S 10	18 30	18 52	19 18	00 52	01 38	02 24	03 11
06	266	48.1	S 18	30.3	139	00.9	12.1	N 17	47.4	3.2	54.5	20	18 45	19 08	19 36	00 42	01 25	02 10	02 56	
07	281	48.0		29.7	153	32.0	12.1		17	50.6	3.0	54.5	30	19 02	19 28	19 59	00 30	01 11	01 53	02 38
08	296	47.9		29.1	168	03.1	12.1		17	53.6	3.0	54.5	35	19 12						

G.M.T.	ARIES			VENUS -4.1			MARS -0.6			JUPITER -1.4			SATURN +0.8			STARS		
	G.H.A.	G.H.A.	Dec.	G.H.A.	G.H.A.	Dec.	G.H.A.	G.H.A.	Dec.	G.H.A.	G.H.A.	Dec.	G.H.A.	G.H.A.	Dec.	Name	S.H.A.	Dec.
d h	° ' "	° ' "	° ' "	° ' "	° ' "	° ' "	° ' "	° ' "	° ' "	° ' "	° ' "	° ' "	° ' "	° ' "	° ' "		° ' "	° ' "
28																		
00	127 01.1	131 57.7	S 1 43.7	36 25.4	N 27 07.7		194 59.5	S 22 02.1	192 27.3	S 21 26.5			Acamar	315 48.3	S 40 28.0			
01	142 03.5	146 58.0	42.5	51 28.2	07.6		210 01.4	02.0	207 29.4	26.4			Achernar	335 56.4	S 57 26.4			
02	157 06.0	161 58.2	41.2	66 31.0	07.6		225 03.2	01.9	222 31.6	26.4			Acrux	173 53.1	S 62 52.8			
03	172 08.5	176 58.4	40.0	81 33.8	07.5		240 05.1	01.8	237 33.8	26.3			Adhara	255 43.3	S 28 55.3			
04	187 10.9	191 58.6	38.7	96 36.6	07.5		255 06.9	01.8	252 35.9	26.3			Aldebaran	291 34.6	N 16 25.8			
05	202 13.4	206 58.8	37.5	111 39.4	07.5		270 08.8	01.7	267 38.1	26.3								
06	217 15.8	221 59.0	S 1 36.2	126 42.2	N 27 07.4		285 10.6	S 22 01.6	282 40.2	S 21 26.2			Alioth	166 55.2	N 56 10.0			
07	232 18.3	236 59.3	35.0	141 45.0	07.4		300 12.5	01.5	297 42.4	26.2			Alkaid	153 30.0	N 49 30.2			
08	247 20.8	251 59.5	33.7	156 47.8	07.4		315 14.4	01.4	312 44.5	26.1			Al Na'ir	28 33.9	S 47 09.1			
09	262 23.2	266 59.7	32.5	171 50.6	07.3		330 16.2	01.4	327 46.7	26.1			Alnilam	276 26.3	S 1 13.7			
10	277 25.7	281 59.9	31.2	186 53.3	07.3		345 18.1	01.3	342 48.9	26.0			Alphard	218 34.6	S 8 29.5			
11	292 28.2	297 00.2	30.0	201 56.1	07.2		0 19.9	01.2	357 51.0	26.0								
12	307 30.6	312 00.4	S 1 28.7	216 58.9	N 27 07.2		15 21.8	S 22 01.1	12 53.2	S 21 25.9			Alphecca	126 44.7	N 26 50.6			
13	322 33.1	327 00.6	27.5	232 01.7	07.2		30 23.6	01.0	27 55.3	25.9			Alpheratz	358 24.7	N 28 52.6			
14	337 35.6	342 00.8	26.3	247 04.5	07.1		45 25.5	00.9	42 57.5	25.9			Altair	62 47.2	N 8 45.9			
15	352 38.0	357 01.1	25.0	262 07.2	07.0		60 27.3	00.9	57 59.6	25.8			Ankaa	353 55.0	S 42 31.3			
16	7 40.5	12 01.3	23.8	277 10.0	07.0		75 29.2	00.8	73 01.8	25.8			Antares	113 15.0	S 26 20.6			
17	22 43.0	27 01.5	22.5	292 12.8	07.0		90 31.1	00.7	88 04.0	25.7								
18	37 45.4	42 01.7	S 1 21.3	307 15.6	N 27 07.0		105 32.9	S 22 00.6	103 06.1	S 21 25.7			Arcturus	146 31.8	N 19 23.0			
19	52 47.9	57 02.0	20.0	322 18.3	06.9		120 34.8	00.5	118 08.3	25.6			Atria	108 52.7	S 68 57.1			
20	67 50.3	72 02.2	18.8	337 21.1	06.9		135 36.6	00.5	133 10.4	25.6			Avior	234 33.5	S 59 23.2			
21	82 52.8	87 02.4	17.5	352 23.9	06.8		150 38.5	00.4	148 12.6	25.5			Bellatrix	279 14.2	N 6 18.7			
22	97 55.3	102 02.7	16.3	7 26.6	06.8		165 40.3	00.3	163 14.7	25.5			Betelgeuse	271 43.9	N 7 23.9			
23	112 57.7	117 02.9	15.0	22 29.4	06.8		180 42.2	00.2	178 16.9	25.4								
29																		
00	128 00.2	132 03.1	S 1 13.8	37 32.2	N 27 06.7		195 44.1	S 22 00.1	193 19.1	S 21 25.4			Canopus	264 13.2	S 52 40.7			
01	143 02.7	147 03.4	12.5	52 34.9	06.7		210 45.9	00.1	208 21.2	25.4			Capella	281 32.6	N 45 57.6			
02	158 05.1	162 03.6	11.3	67 37.7	06.6		225 47.8	22 00.0	223 23.4	25.3			Deneb	49 58.9	N 45 08.5			
03	173 07.6	177 03.8	10.0	82 40.4	06.6		240 49.6	21 59.9	238 25.5	25.3			Denebola	183 13.8	N 14 47.3			
04	188 10.1	192 04.1	08.8	97 43.2	06.6		255 51.5	59.8	253 27.7	25.2			Diphda	349 35.7	S 18 12.2			
05	203 12.5	207 04.3	07.6	112 45.9	06.5		270 53.4	59.7	268 29.9	25.2								
06	218 15.0	222 04.5	S 1 06.3	127 48.7	N 27 06.5		285 55.2	S 21 59.6	283 32.0	S 21 25.1			Dubhe	194 39.7	N 61 57.5			
07	233 17.5	237 04.8	05.1	142 51.4	06.4		300 57.1	59.6	298 34.2	25.1			Elnath	279 02.4	N 28 34.5			
08	248 19.9	252 05.0	03.8	157 54.2	06.4		315 58.9	59.5	313 36.3	25.0			Eltanin	91 05.0	N 51 29.5			
09	263 22.4	267 05.3	02.6	172 56.9	06.3		331 00.8	59.4	328 38.5	25.0			Enif	34 26.3	N 9 41.7			
10	278 24.8	282 05.5	01.3	187 59.7	06.3		346 02.6	59.3	343 40.6	25.0			Fomalhaut	16 07.9	S 29 49.9			
11	293 27.3	297 05.7	1 00.1	203 02.4	06.3		1 04.5	59.2	358 42.8	24.9								
12	308 29.8	312 06.0	S 0 58.8	218 05.2	N 27 06.2		16 06.4	S 21 59.2	13 45.0	S 21 24.9			Gacrux	172 44.7	S 56 53.5			
13	323 32.2	327 06.2	57.6	233 07.9	06.2		31 08.2	59.1	28 47.1	24.8			Gienah	176 32.8	S 17 19.5			
14	338 34.7	342 06.5	56.3	248 10.7	06.1		46 10.1	59.0	43 49.3	24.8			Hadar	149 43.9	S 60 10.8			
15	353 37.2	357 06.7	55.1	263 13.4	06.1		61 11.9	58.9	58 51.4	24.7			Hamal	328 45.5	N 23 16.7			
16	8 39.6	12 07.0	53.9	278 16.1	06.1		76 13.8	58.8	73 53.6	24.7			Kaus Aust.	84 36.6	S 34 24.1			
17	23 42.1	27 07.2	52.6	293 18.9	06.0		91 15.7	58.7	88 55.8	24.6								
18	38 44.6	42 07.5	S 0 51.4	308 21.6	N 27 06.0		106 17.5	S 21 58.7	103 57.9	S 21 24.6			Kochab	137 18.6	N 74 18.7			
19	53 47.0	57 07.7	50.1	323 24.3	05.9		121 19.4	58.6	119 00.1	24.5			Markab	14 18.0	N 14 59.7			
20	68 49.5	72 08.0	48.9	338 27.1	05.9		136 21.2	58.5	134 02.2	24.5			Menkar	314 56.4	N 3 56.1			
21	83 51.9	87 08.2	47.6	353 29.8	05.8		151 23.1	58.4	149 04.4	24.5			Menkent	148 54.2	S 36 10.5			
22	98 54.4	102 08.5	46.4	8 32.5	05.8		166 25.0	58.3	164 06.5	24.4			Miaplacidus	221 47.1	S 69 33.4			
23	113 56.9	117 08.7	45.1	23 35.2	05.8		181 26.8	58.3	179 08.7	24.4								
30																		
00	128 59.3	132 09.0	S 0 43.9	38 38.0	N 27 05.7		196 28.7	S 21 58.2	194 10.9	S 21 24.3			Mirfak	309 36.9	N 49 43.5			
01	144 01.8	147 09.2	42.6	53 40.7	05.7		211 30.5	58.1	209 13.0	24.3			Nunki	76 47.7	S 26 20.7			
02	159 04.3	162 09.5	41.4	68 43.4	05.6		226 32.4	58.0	224 15.2	24.2			Peacock	54 22.2	S 56 51.6			
03	174 06.7	177 09.7	40.2	83 46.1	05.6		241 34.2	57.9	239 17.3	24.2			Pollux	244 15.7	N 28 07.1			
04	189 09.2	192 10.0	38.9	98 48.8	05.5		256 36.1	57.8	254 19.5	24.1			Procyon	245 40.8	N 5 19.4			
05	204 11.7	207 10.2	37.7	113 51.6	05.5		271 38.0	57.8	269 21.7	24.1								
06	219 14.1	222 10.5	S 0 36.4	128 54.3	N 27 05.5		286 39.8	S 21 57.7	284 23.8	S 21 24.0			Rasalhague	96 43.4	N 12 35.2			
07	234 16.6	237 10.8	35.2	143 57.0	05.4		301 41.7	57.6	299 26.0	24.0			Regulus	208 25.3	N 12 09.4			
08	249 19.1	252 11.0	33.9	158 59.7	05.4		316 43.5	57.5	314 28.1	24.0			Rigel	281 49.9	S 8 15.0			
09	264 21.5	267 11.3	32.7	174 02.4	05.3		331 45.4	57.4	329 30.3	23.9			Rigel Kent.	140 45.8	S 60 40.1			
10	279 24.0	282 11.5	31.5	189 05.1	05.3		346 47.3	57.4	344 32.5	23.9			Sabik	102 58.2	S 15 40.6			
11	294 26.4	297 11.8	30.2	204 07.8	05.2		1 49.1	57.3	359 34.6	23.8								
12	309 28.9	312 12.1	S 0 29.0	219 10.5	N 27 05.2		16 51.0	S 21 57.2	14 36.8	S 21 23.8			Schedar	350 25.9	N 56 19.6			
13	324 31.4	327 12.3	27.7	234 13.2	05.2		31 52.8	57.1	29 38.9	23.7			Shaula	97 16.0	S 37 04.4			
14	339 33.8	342 12.6	26.5	249 15.9	05.1		46 54.7	57.0	44 41.1	23.7			Sirius	259 08.3	S 16 39.9			
15	354 36.3	357 12.8	25.2	264 18.6	05.1		61 56.6	56.9	59 43.3	23.6			Spica	159 12.9	S 10 57.5			
16	9 38.8	12 13.1	24.0	279 21.3	05.0		76 58.4	56.9	74 45.4	23.6			Suhail	223 21.1	S 43 16.6			
17	24 41.2	27 13.4	22.8	294 24.0	05.0		92 00.3	56.8	89 47.6	23.6								
18	39 43.7	42 13.6	S 0 21.5	309 26.7	N 27 04.9		107 02.1	S 21 56.7	104 49.7	S 21 23.5			Vega	81 06.1	N 38 44.8			
19	54 46.2	57 13.9	20.3	324 29.4	04.9		122 04.0	56.6	119 51.9	23.5			Zuben'ubi	137 49.3	S 15 52.7			
20	69 48.6																	

G.M.T.	SUN		MOON					Lat.	Twilight		Sun-rise	Moonrise			
	G.H.A.	Dec.	G.H.A.	φ	Dec.	d	H.P.		Naut.	Civil		28	29	30	31
d h	$^{\circ}$ $'$ $''$	$^{\circ}$ $'$ $''$	$^{\circ}$ $'$ $''$	$^{\circ}$ $'$ $''$	$^{\circ}$ $'$ $''$	$^{\circ}$ $'$ $''$	$^{\circ}$ $'$ $''$	$^{\circ}$	h m	h m	h m	h m	h m	h m	h m
28 00	176 45.9	S 18 18.7	40 20.7	12.1	N 18 30.7	1.6	54.3	N 72	07 21	08 53	10 57	$\square$	$\square$	12 12	14 07
01	191 45.8	18.0	54 51.8	12.1	18 32.3	1.5	54.3	N 70	07 11	08 32	10 04	11 08	12 02	13 18	14 46
02	206 45.6	17.4	69 22.9	12.1	18 33.8	1.4	54.3	68	07 04	08 15	09 31	11 55	12 47	13 54	15 12
03	221 45.5	16.7	83 54.0	12.1	18 35.2	1.3	54.2	66	06 57	08 02	09 08	12 25	13 16	14 20	15 32
04	236 45.4	16.1	98 25.1	12.1	18 36.5	1.3	54.2	64	06 51	07 51	08 49	12 48	13 39	14 40	15 48
05	251 45.3	15.4	112 56.2	12.0	18 37.8	1.1	54.2	62	06 46	07 41	08 34	13 06	13 57	14 56	16 02
06	266 45.2	S 18 14.8	127 27.2	12.1	N 18 38.9	1.1	54.2	60	06 42	07 33	08 21	13 21	14 11	15 09	16 13
07	281 45.1	14.1	141 58.3	12.1	18 40.0	1.0	54.2	N 58	06 38	07 26	08 10	13 34	14 24	15 20	16 23
08	296 44.9	13.4	156 29.4	12.1	18 41.0	0.8	54.2	56	06 34	07 19	08 01	13 45	14 35	15 30	16 31
09	311 44.8	12.8	171 00.5	12.1	18 41.8	0.8	54.2	54	06 30	07 13	07 52	13 55	14 44	15 39	16 39
10	326 44.7	12.1	185 31.6	12.1	18 42.6	0.8	54.2	52	06 27	07 08	07 45	14 03	14 53	15 47	16 45
11	341 44.6	11.5	200 02.7	12.1	18 43.4	0.6	54.2	50	06 24	07 03	07 38	14 11	15 00	15 54	16 52
12	356 44.5	S 18 10.8	214 33.8	12.1	N 18 44.0	0.5	54.2	45	06 17	06 52	07 23	14 28	15 17	16 09	17 05
13	11 44.3	10.1	229 04.9	12.2	18 44.5	0.5	54.1	N 40	06 10	06 43	07 11	14 41	15 30	16 22	17 15
14	26 44.2	09.5	243 36.1	12.1	18 45.0	0.4	54.1	35	06 04	06 34	07 01	14 53	15 41	16 32	17 25
15	41 44.1	08.8	258 07.2	12.1	18 45.4	0.3	54.1	30	05 58	06 27	06 52	15 03	15 51	16 41	17 33
16	56 44.0	08.2	272 38.3	12.1	18 45.7	0.1	54.1	20	05 47	06 13	06 36	15 20	16 08	16 57	17 47
17	71 43.9	07.5	287 09.4	12.1	18 45.8	0.2	54.1	N 10	05 35	06 01	06 23	15 35	16 23	17 11	17 59
18	86 43.8	S 18 06.8	301 40.5	12.2	N 18 46.0	0.0	54.1	0	05 23	05 48	06 10	15 49	16 37	17 24	18 10
19	101 43.7	06.2	316 11.7	12.1	18 46.0	0.1	54.1	S 10	05 08	05 34	05 56	16 04	16 51	17 37	18 22
20	116 43.5	05.5	330 42.8	12.2	18 45.9	0.1	54.1	20	04 51	05 19	05 42	16 19	17 06	17 51	18 34
21	131 43.4	04.8	345 14.0	12.1	18 45.8	0.3	54.1	30	04 29	05 00	05 26	16 37	17 23	18 07	18 48
22	146 43.3	04.2	359 45.1	12.2	18 45.5	0.3	54.1	35	04 15	04 48	05 16	16 46	17 33	18 16	18 56
23	161 43.2	03.5	14 16.3	12.2	18 45.2	0.4	54.1	40	03 57	04 35	05 05	16 58	17 44	18 26	19 05
24								45	03 36	04 18	04 52	17 12	17 57	18 38	19 15
29 00	176 43.1	S 18 02.8	28 47.5	12.1	N 18 44.8	0.5	54.1	S 50	03 06	03 57	04 36	17 28	18 13	18 53	19 28
01	191 43.0	02.2	43 18.6	12.2	18 44.3	0.6	54.1	52	02 51	03 47	04 29	17 36	18 21	19 00	19 34
02	206 42.9	01.5	57 49.8	12.2	18 43.7	0.7	54.1	54	02 33	03 36	04 20	17 45	18 30	19 08	19 40
03	221 42.8	00.8	72 21.0	12.2	18 43.0	0.7	54.1	56	02 10	03 22	04 11	17 55	18 39	19 16	19 48
04	236 42.6	18 00.2	86 52.2	12.2	18 42.3	0.9	54.0	58	01 37	03 06	04 00	18 06	18 50	19 26	19 56
05	251 42.5	17 59.5	101 23.4	12.2	18 41.4	0.9	54.0	S 60	///	02 47	03 48	18 19	19 02	19 37	20 05
06	266 42.4	S 17 58.8	115 54.6	12.3	N 18 40.5	1.0	54.0								
07	281 42.3	58.2	130 25.9	12.2	18 39.5	1.1	54.0	Lat.	Sun-set	Twilight		Moonset			
08	296 42.2	57.5	144 57.1	12.3	18 38.4	1.2	54.0			Civil	Naut.	28	29	30	31
09	311 42.1	56.8	159 28.4	12.2	18 37.2	1.3	54.0	$^{\circ}$	h m	h m	h m	h m	h m	h m	h m
10	326 42.0	56.2	173 59.6	12.3	18 35.9	1.3	54.0	N 72	13 30	15 35	17 07	$\square$	$\square$	10 18	10 00
11	341 41.9	55.5	188 30.9	12.3	18 34.6	1.4	54.0	N 70	14 24	15 56	17 16	08 05	08 50	09 11	09 20
12	356 41.8	S 17 54.8	203 02.2	12.3	N 18 33.2	1.6	54.0	68	14 56	16 12	17 24	07 18	08 05	08 35	08 53
13	11 41.7	54.1	217 33.5	12.3	18 31.6	1.6	54.0	66	15 20	16 25	17 30	06 48	07 35	08 09	08 32
14	26 41.6	53.5	232 04.8	12.3	18 30.0	1.7	54.0	64	15 38	16 36	17 36	06 25	07 13	07 49	08 16
15	41 41.5	52.8	246 36.1	12.3	18 28.3	1.8	54.0	62	15 53	16 46	17 41	06 07	06 55	07 33	08 02
16	56 41.3	52.1	261 07.4	12.3	18 26.5	1.8	54.0	60	16 06	16 54	17 45	05 52	06 40	07 19	07 50
17	71 41.2	51.4	275 38.7	12.4	18 24.7	2.0	54.0	N 58	16 17	17 01	17 50	05 39	06 27	07 07	07 40
18	86 41.1	S 17 50.8	290 10.1	12.4	N 18 22.7	2.0	54.0	56	16 26	17 08	17 53	05 28	06 16	06 57	07 31
19	101 41.0	50.1	304 41.5	12.3	18 20.7	2.1	54.0	54	16 35	17 14	17 57	05 19	06 07	06 48	07 23
20	116 40.9	49.4	319 12.8	12.4	18 18.6	2.2	54.0	52	16 42	17 19	18 00	05 10	05 58	06 40	07 16
21	131 40.8	48.7	333 44.2	12.4	18 16.4	2.3	54.0	50	16 49	17 24	18 03	05 02	05 50	06 33	07 10
22	146 40.7	48.1	348 15.6	12.5	18 14.1	2.4	54.0	45	17 03	17 35	18 10	04 46	05 34	06 17	06 56
23	161 40.6	47.4	2 47.1	12.4	18 11.7	2.4	54.0	N 40	17 15	17 44	18 17	04 32	05 20	06 05	06 45
30 00	176 40.5	S 17 46.7	17 18.5	12.5	N 18 09.3	2.5	54.0	35	17 26	17 52	18 23	04 21	05 09	05 54	06 35
01	191 40.4	46.0	31 50.0	12.4	18 06.8	2.7	54.0	30	17 35	18 00	18 28	04 11	04 59	05 44	06 27
02	206 40.3	45.3	46 21.4	12.5	18 04.1	2.6	54.0	20	17 50	18 13	18 40	03 54	04 42	05 28	06 12
03	221 40.2	44.7	60 52.9	12.5	18 01.5	2.8	54.0	N 10	18 04	18 26	18 51	03 39	04 27	05 13	05 59
04	236 40.1	44.0	75 24.4	12.5	17 58.7	2.9	54.0	0	18 17	18 38	19 04	03 25	04 13	05 00	05 47
05	251 40.0	43.3	89 55.9	12.6	17 55.8	2.9	54.0	S 10	18 30	18 52	19 18	03 11	03 58	04 46	05 34
06	266 39.9	S 17 42.6	104 27.5	12.5	N 17 52.9	3.0	54.0	20	18 44	19 07	19 35	02 56	03 43	04 32	05 21
07	281 39.8	41.9	118 59.0	12.6	17 49.9	3.1	54.0	30	19 00	19 26	19 57	02 38	03 26	04 15	05 06
08	296 39.7	41.2	133 30.6	12.6	17 46.8	3.2	54.0	35	19 10	19 37	20 11	02 28	03 16	04 06	04 57
09	311 39.6	40.6	148 02.2	12.6	17 43.6	3.3	54.0	40	19 21	19 51	20 28	02 17	03 04	03 54	04 47
10	326 39.5	39.9	162 33.8	12.6	17 40.3	3.3	54.0	45	19 34	20 07	20 49	02 03	02 50	03 41	04 36
11	341 39.4	39.2	177 05.4	12.6	17 37.0	3.5	54.0	S 50	19 49	20 28	21 18	01 47	02 34	03 25	04 21
12	356 39.3	S 17 38.5	191 37.0	12.7	N 17 33.5	3.5	54.0	52	19 57	20 38	21 33	01 39	02 26	03 18	04 14
13	11 39.2	37.8	206 08.7	12.7	17 30.0	3.5	54.0	54	20 05	20 49	21 51	01 31	02 17	03 10	04 07
14	26 39.1	37.1	220 40.4	12.7	17 26.5	3.7	54.0	56	20 14	21 02	22 13	01 21	02 07	03 00	03 59
15	41 39.0	36.4	235 12.1	12.7	17 22.8	3.7	54.0	58	20 25	21 18	22 44	01 10	01 56	02 50	03 49
16	56 38.9	35.7	249 43.8	12.7	17 19.1	3.9	54.0	S 60	20 37	21 37	23 45	00 58	01 43	02 37	03 39
17	71 38.8	35.1	264 15.5	12.8	17 15.2	3.8	54.0								
18	86 38.7	S 17 34.4	278 47.3	12.7	N 17 11.4	4.0	54.0	Day	SUN		MOON				
19	101 38.6	33.7	293 19.0	12.8	17 07.4	4.1	54.0		Eqn. of Time	Mer.	Mer.	Pass.	Pass.	Age	Phase
20	116 38.5	33.0	307 50.8	12.8	17 03.3	4.1	54.0		00h	Pass.	Upper	Lower			
21	131 38.4	32.3	322 22.6	12.9	16 59.2	4.2	54.0		m s	m s	h m	h m	h m	d	
22	146 38.3	31.6	336 54.5	12.8	16 55.0	4.3	54.0	28	12 56	13 02	12 13	22 01	09 37	12	

	ARIES		VENUS -4.1		MARS -0.5		JUPITER -1.4		SATURN +0.8		STARS		
G.M.T.	G.H.A.	G.H.A.	Dec.	G.H.A.	Dec.	G.H.A.	Dec.	G.H.A.	Dec.	Name	S.H.A.	Dec.	
31 00 01 02 03 04 05 06 07 08 09 10 11 12 13 14 15 16 17 18 19 20 21 22 23	129 58.5 145 00.9 160 03.4 175 05.9 190 08.3 205 10.8 220 13.3 235 15.7 250 18.2 265 20.7 280 23.1 295 25.6 310 28.1 325 30.5 340 33.0 355 35.4 10 37.9 25 40.4 40 42.8 55 45.3 70 47.8 85 50.2 100 52.7 115 55.2	132 15.3 S 147 15.5 162 15.8 177 16.1 192 16.4 207 16.6 222 16.9 S 237 17.2 252 17.5 267 17.7 282 18.0 297 18.3 S 312 18.6 N 327 18.9 342 19.2 357 19.4 12 19.7 27 20.0 42 20.3 N 57 20.6 72 20.9 87 21.2 102 21.5 117 21.7	0 14.1 12.8 11.6 10.3 09.1 07.8 0 06.6 05.4 04.1 02.9 01.6 0 00.4 00.8 02.1 03.3 04.6 05.8 07.0 08.3 09.5 10.8 12.0 13.2 14.5	39 42.9 N 54 45.6 69 48.2 84 50.9 99 53.6 114 56.3 129 59.0 N 145 01.6 160 04.3 175 07.0 190 09.7 205 12.3 220 15.0 N 235 17.7 250 20.3 265 23.0 280 25.7 295 28.3 310 31.0 N 325 33.6 340 36.3 355 38.9 10 41.6 25 44.2	0 04.7 04.6 04.6 04.6 04.5 04.5 04.4 04.4 04.3 04.3 04.2 04.2 04.2 04.2 04.1 04.1 04.0 04.0 03.9 03.8 03.8 03.8 03.7 03.7	197 13.3 S 212 15.2 227 17.0 242 18.9 257 20.7 272 22.6 287 24.5 S 302 26.3 317 28.2 332 30.0 347 31.9 2 33.8 17 35.6 S 32 37.5 47 39.4 62 41.2 77 43.1 92 44.9 107 46.8 S 122 48.7 137 50.5 152 52.4 167 54.3 182 56.1	52.1 56.1 56.0 55.9 55.9 55.8 55.7 55.6 55.5 55.4 55.4 55.3 55.2 55.1 55.0 55.0 54.9 54.8 54.7 54.6 54.5 54.5 54.3	195 02.7 S 210 04.9 225 07.0 240 09.2 255 11.3 270 13.5 285 15.7 S 300 17.8 315 20.0 330 22.1 345 24.3 0 26.5 15 28.6 S 30 30.8 45 32.9 60 35.1 75 37.3 90 39.4 105 41.6 S 120 43.7 135 45.9 150 48.1 165 50.2 180 52.4	52.1 23.2 23.2 23.1 23.1 23.0 23.0 22.9 22.9 22.8 22.8 22.7 22.7 22.6 22.6 22.6 22.5 22.5 22.4 22.4 22.3 22.3 22.2	Acamar Achernar Acrux Adhara Aldebaran Alioth Alkaid Al Na'ir Alnilam Alphard Alphecca Alpheratz Altair Ankaa Antares Arcturus Atria Avior Bellatrix Betelgeuse Canopus Capella Deneb Denebola Diphda Dubhe Elnath Eltanin Enif Fomalhaut Gacrux Gienah Hadar Hamal Kaus Aust. Kochab Markab Menkar Menkent Miaplacidus Mirfak Nunki Peacock Pollux Procyon Rasalhague Regulus Rigel Rigel Kent. Sabik Schedar Shaula Sirius Spica Suhail Vega Zuben'ubi Venus Mars Jupiter Saturn	315 48.3 335 56.4 173 53.1 255 43.3 291 34.6 166 55.2 153 30.0 28 33.9 276 26.3 218 34.6 126 44.6 358 24.7 62 47.1 353 55.0 113 15.0 146 31.8 108 52.6 234 33.5 279 14.2 271 43.9 264 13.3 281 32.6 49 58.9 183 13.8 349 35.7 194 39.7 279 02.4 91 04.9 34 26.3 16 07.9 172 44.6 176 32.8 149 43.9 328 45.5 84 36.6 137 18.5 14 18.0 314 56.4 148 54.2 221 47.1 309 36.9 76 47.7 54 22.2 244 15.7 245 40.8 96 43.4 208 25.3 281 49.9 140 45.7 102 58.1 350 25.9 97 15.9 259 08.3 159 12.9 223 21.1 81 06.1 137 49.3 1 24.4 269 49.3 67 00.4 64 56.9	S 40 28.0 S 57 26.4 S 62 52.8 S 28 55.4 N 16 25.8 N 56 10.0 N 49 30.2 S 47 09.1 S 1 13.8 S 8 29.5 N 26 50.6 N 28 52.6 N 8 45.9 S 42 31.3 S 26 20.6 N 19 23.0 S 68 57.1 S 59 23.2 N 6 18.7 N 7 23.9 S 52 40.8 N 45 57.6 N 45 08.5 N 14 47.3 S 18 12.2 N 61 57.5 N 28 34.5 N 51 29.5 N 9 41.1 S 29 49.9 S 56 53.5 S 17 19.5 S 60 10.8 N 23 16.7 S 34 24.1 N 74 18.7 N 14 59.7 N 3 56.1 S 36 10.5 S 69 33.4 N 49 43.5 S 26 20.7 S 56 51.6 N 28 07.1 N 5 19.4 N 12 35.2 N 12 09.4 S 8 15.0 S 60 40.1 S 15 40.6 N 56 19.6 S 37 04.4 S 16 40.0 S 10 57.5 S 43 16.6 N 38 44.7 S 15 52.7 15 10 21 13 10 47 10 55	
T U E S D A Y	h m	v d	v d	v d	v d	v d	v d	v d	v d	Mer. Pass. 15 13.7			

G.M.T.		SUN		MOON				Lat.	Twilight		Sun-rise	Moonrise							
		G.H.A.	Dec.	G.H.A.	<i>v</i>	Dec.	<i>d</i>		H.P.	Naut.		Civil	31	1	2	3			
d	h	°	'	°	'	°	'	°	'	°	'	°	'	°	'	°	'		
TUESDAY	31 00	176	38.1	S17	30.2	5 58.2	12.9	N16	46.4	4.5	54.0	N 72	07 10	08 39	10 29	14 07	15 51	17 31	19 09
	01	191	38.0		29.5	20 30.1	12.9	16 41.9	4.5	54.0	N 70	07 02	08 21	09 46	14 46	16 16	17 47	19 18	
	02	206	37.9		28.8	35 02.0	13.0	16 37.4	4.5	54.0	68	06 56	08 06	09 18	15 12	16 35	17 59	19 25	
	03	221	37.8	..	28.1	49 34.0	12.9	16 32.9	4.7	54.0	66	06 50	07 54	08 57	15 32	16 49	18 09	19 30	
	04	236	37.7		27.4	64 05.9	13.0	16 28.2	4.7	54.0	64	06 45	07 44	08 40	15 48	17 02	18 18	19 35	
	05	251	37.6		26.8	78 37.9	13.0	16 23.5	4.8	54.0	62	06 40	07 35	08 26	16 02	17 12	18 25	19 39	
	06	266	37.5	S17	26.1	93 09.9	13.0	N16	18.7	4.9	54.0	60	06 36	07 27	08 14	16 13	17 21	18 31	19 43
	07	281	37.5		25.4	107 41.9	13.0	16 13.8	4.9	54.0	N 58	06 33	07 20	08 04	16 23	17 28	18 36	19 46	
	08	296	37.4		24.7	122 13.9	13.1	16 08.9	5.1	54.0	56	06 29	07 14	07 55	16 31	17 35	18 41	19 49	
	09	311	37.3	..	24.0	136 46.0	13.1	16 03.8	5.0	54.0	54	06 26	07 09	07 47	16 39	17 41	18 46	19 52	
	10	326	37.2		23.3	151 18.1	13.1	15 58.8	5.2	54.0	52	06 23	07 03	07 40	16 45	17 47	18 50	19 54	
	11	341	37.1		22.6	165 50.2	13.1	15 53.6	5.2	54.0	50	06 20	06 59	07 34	16 52	17 52	18 53	19 56	
	12	356	37.0	S17	21.9	180 22.3	13.2	N15	48.4	5.3	54.0	45	06 14	06 49	07 20	17 05	18 02	19 01	20 01
	13	11	36.9		21.2	194 54.5	13.2	15 43.1	5.4	54.0	N 40	06 08	06 40	07 09	17 15	18 11	19 07	20 04	
	14	26	36.8		20.5	209 26.7	13.2	15 37.7	5.5	54.0	35	06 02	06 33	06 59	17 25	18 18	19 13	20 08	
	15	41	36.7	..	19.8	223 58.9	13.2	15 32.2	5.5	54.0	30	05 57	06 25	06 51	17 33	18 25	19 17	20 10	
	16	56	36.6		19.1	238 31.1	13.2	15 26.7	5.6	54.0	20	05 46	06 13	06 35	17 47	18 36	19 26	20 15	
	17	71	36.5		18.4	253 03.3	13.3	15 21.1	5.6	54.0	N 10	05 35	06 01	06 22	17 59	18 46	19 33	20 20	
	18	86	36.5	S17	17.7	267 35.6	13.3	N15	15.5	5.7	54.0	0	05 23	05 48	06 10	18 10	18 56	19 40	20 24
	19	101	36.4		17.0	282 07.9	13.3	15 09.8	5.8	54.0	S 10	05 10	05 35	05 58	18 22	19 05	19 47	20 28	
	20	116	36.3		16.3	296 40.2	13.3	15 04.0	5.9	54.0	20	04 53	05 21	05 44	18 34	19 15	19 54	20 33	
	21	131	36.2	..	15.6	311 12.5	13.4	14 58.1	5.9	54.0	30	04 32	05 03	05 28	18 48	19 26	20 02	20 38	
	22	146	36.1		14.9	325 44.9	13.3	14 52.2	6.0	54.0	35	04 18	04 52	05 19	18 56	19 32	20 07	20 40	
	23	161	36.0		14.2	340 17.2	13.4	14 46.2	6.0	54.0	40	04 02	04 39	05 09	19 05	19 40	20 12	20 43	
WEDNESDAY	00	176	35.9	S17	13.4	354 49.6	13.4	N14	40.2	6.1	54.1	45	03 41	04 23	04 56	19 15	19 48	20 19	20 47
	01	191	35.8		12.7	9 22.0	13.5	14 34.1	6.2	54.1	S 50	03 14	04 03	04 41	19 28	19 59	20 26	20 52	
	02	206	35.8		12.0	23 54.5	13.4	14 27.9	6.3	54.1	52	02 59	03 54	04 34	19 34	20 03	20 30	20 54	
	03	221	35.7	..	11.3	38 26.9	13.5	14 21.6	6.3	54.1	54	02 43	03 43	04 26	19 40	20 09	20 33	20 56	
	04	236	35.6		10.6	52 59.4	13.5	14 15.3	6.3	54.1	56	02 22	03 30	04 17	19 48	20 14	20 37	20 58	
	05	251	35.5		09.9	67 31.9	13.6	14 09.0	6.5	54.1	58	01 54	03 15	04 07	19 56	20 21	20 42	21 01	
	06	266	35.4	S17	09.2	82 04.5	13.5	N14	02.5	6.5	54.1	S 60	01 08	02 58	03 56	20 05	20 28	20 47	21 04
	07	281	35.3		08.5	96 37.0	13.6	13 56.0	6.5	54.1	Lat.	Sun-set	Twilight		Moonset				
	08	296	35.3		07.8	111 09.6	13.6	13 49.5	6.7	54.1			Civil	Naut.	31	1	2	3	
	09	311	35.2	..	07.1	125 42.2	13.6	13 42.8	6.6	54.1					h m	h m	h m	h m	
	10	326	35.1		06.4	140 14.8	13.6	13 36.2	6.8	54.1					h m	h m	h m	h m	
	11	341	35.0		05.7	154 47.4	13.7	13 29.4	6.8	54.1	N 72	14 00	15 49	17 19	10 00	09 50	09 42	09 36	
	12	356	34.9	S17	04.9	169 20.1	13.7	N13	22.6	6.9	54.1	N 70	14 42	16 08	17 26	09 20	09 24	09 25	09 25
	13	11	34.8		04.2	183 52.8	13.7	13 15.7	6.9	54.1	68	15 10	16 23	17 33	08 53	09 05	09 12	09 17	
	14	26	34.8		03.5	198 25.5	13.7	13 08.8	7.0	54.1	66	15 31	16 35	17 39	08 32	08 49	09 01	09 10	
	15	41	34.7	..	02.8	212 58.2	13.7	13 01.8	7.0	54.1	64	15 48	16 45	17 44	08 16	08 36	08 51	09 04	
	16	56	34.6		02.1	227 30.9	13.8	12 54.8	7.1	54.2	62	16 02	16 54	17 48	08 02	08 25	08 43	08 59	
	17	71	34.5		01.4	242 03.7	13.8	12 47.7	7.1	54.2	60	16 14	17 01	17 52	07 50	08 16	08 36	08 54	
	18	86	34.4	S17	00.7	256 36.5	13.8	N12	40.6	7.3	54.2	N 58	16 24	17 08	17 56	07 40	08 07	08 30	08 50
	19	101	34.4	16 59.9		271 09.3	13.8	12 33.3	7.2	54.2	56	16 33	17 14	17 59	07 31	08 00	08 25	08 47	
	20	116	34.3		59.2	285 42.1	13.9	12 26.1	7.3	54.2	54	16 41	17 19	18 02	07 23	07 54	08 20	08 44	
	21	131	34.2	..	58.5	300 15.0	13.8	12 18.8	7.4	54.2	52	16 48	17 24	18 05	07 16	07 48	08 15	08 41	
	22	146	34.1		57.8	314 47.8	13.9	12 11.4	7.4	54.2	50	16 54	17 29	18 08	07 10	07 43	08 11	08 38	
	23	161	34.0		57.1	329 20.7	13.9	12 04.0	7.5	54.2	45	17 08	17 39	18 14	06 56	07 31	08 03	08 32	
THURSDAY	00	176	34.0	S16	56.4	343 53.6	13.9	N11	56.5	7.6	54.2	N 40	17 19	17 47	18 20	06 45	07 22	07 55	08 27
	01	191	33.9		55.6	358 26.5	14.0	11 48.9	7.6	54.2	35	17 29	17 55	18 25	06 35	07 13	07 49	08 23	
	02	206	33.8		54.9	12 59.5	13.9	11 41.3	7.6	54.2	30	17 37	18 02	18 31	06 27	07 06	07 44	08 19	
	03	221	33.7	..	54.2	27 32.4	14.0	11 33.7	7.7	54.2	20	17 52	18 15	18 41	06 12	06 54	07 34	08 13	
	04	236	33.7		53.5	42 05.4	14.0	11 26.0	7.7	54.3	N 10	18 05	18 27	18 52	05 59	06 43	07 25	08 07	
	05	251	33.6		52.8	56 38.4	14.0	11 18.3	7.8	54.3	0	18 17	18 39	19 04	05 47	06 32	07 17	08 01	
	06	266	33.5	S16	52.0	71 11.4	14.1	N11	10.5	7.9	54.3	S 10	18 30	18 52	19 17	05 34	06 22	07 09	07 56
	07	281	33.4		51.3	85 44.5	14.0	11 02.6	7.9	54.3	20	18 43	19 06	19 34	05 21	06 11	07 00	07 50	
	08	296	33.4		50.6	100 17.5	14.1	10 54.7	7.9	54.3	30	18 58	19 24	19 55	05 06	05 58	06 50	07 43	
	09	311	33.3	..	49.9	114 50.6	14.1	10 46.8	8.0	54.3	35	19 07	19 35	20 08	04 57	05 51	06 45	07 39	
	10	326	33.2		49.2	129 23.7	14.1	10 38.8	8.0	54.3	40	19 18	19 48	20 24	04 47	05 42	06 38	07 35	
	11	341	33.1		48.4	143 56.8	14.1	10 30.8	8.1	54.3	45	19 30	20 03	20 45	04 36	05 32	06 30	07 29	
	12	356	33.1	S16	47.7	158 29.9	14.1	N10	22.7	8.2	54.3	S 50	19 45	20 23	21 12	04 21	05 20	06 21	07 23
	13	11	33.0		47.0	173 03.0	14.2	10 14.5	8.2	54.3	52	19 52	20 32	21 26	04 14	05 14	06 17	07 20	
	14	26	32.9		46.3	187 36.2	14.1	10 06.3	8.2	54.4	54	20 00	20 43	21 42	04 07	05 08	06 12	07 17	
	15	41	32.8	..	45.5	202 09.3	14.2	9 58.1	8.3	54.44									

G.M.T.	ARIES			VENUS -4.1			MARS -0.4			JUPITER -1.4			SATURN +0.8			STARS		
	G.H.A.	G.H.A.	Dec.	G.H.A.	G.H.A.	Dec.	G.H.A.	G.H.A.	Dec.	G.H.A.	G.H.A.	Dec.	G.H.A.	G.H.A.	Dec.	Name	S.H.A.	Dec.
d h																		
3 00	132 55.9	132 37.0	N 11 50	42 52.3	N27 01.4		199 27.5	S21 50.2		197 38.3	S21 20.0		Acamar	315 48.3	S 40 28.0			
01	147 58.4	147 37.3	16.2	57 54.8	01.3		214 29.3	50.1		212 40.5	19.9		Achernar	335 56.4	S 57 26.4			
02	163 00.8	162 37.7	17.5	72 57.4	01.3		229 31.2	50.0		227 42.6	19.9		Acrux	173 53.0	S 62 52.8			
03	178 03.3	177 38.0	18.7	88 00.0	01.2		244 33.1	49.9		242 44.8	19.8		Adhara	255 43.3	S 28 55.4			
04	193 05.8	192 38.3	19.9	103 02.6	01.2		259 34.9	49.8		257 47.0	19.8		Aldebaran	291 34.6	N 16 25.8			
05	208 08.2	207 38.7	21.2	118 05.1	01.1		274 36.8	49.7		272 49.1	19.7							
06	223 10.7	222 39.0	N 1 22.4	133 07.7	N27 01.1		289 38.7	S21 49.7		287 51.3	S21 19.7		Alioth	166 55.2	N 56 10.0			
07	238 13.1	237 39.4	23.6	148 10.3	01.0		304 40.5	49.6		302 53.5	19.7		Alkaid	153 30.0	N 49 30.2			
08	253 15.6	252 39.7	24.9	163 12.8	01.0		319 42.4	49.5		317 55.6	19.6		Al Na'ir	28 33.8	S 47 09.1			
09	268 18.1	267 40.0	26.1	178 15.4	00.9		334 44.3	49.4		332 57.8	19.6		Alnilam	276 26.3	S 1 13.8			
10	283 20.5	282 40.4	27.3	193 17.9	00.9		349 46.1	49.3		348 00.0	19.5		Alphard	218 34.6	S 8 29.5			
11	298 23.0	297 40.7	28.6	208 20.5	00.8		4 48.0	49.2		3 02.1	19.5							
12	313 25.5	312 41.1	N 1 29.8	223 23.1	N27 00.8		19 49.9	S21 49.2		18 04.3	S21 19.4		Alphecca	126 44.6	N 26 50.6			
13	328 27.9	327 41.4	31.0	238 25.6	00.7		34 51.7	49.1		33 06.4	19.4		Alpheratz	358 24.7	N 28 52.5			
14	343 30.4	342 41.7	32.2	253 28.2	00.7		49 53.6	49.0		48 08.6	19.3		Altair	62 47.1	N 8 45.9			
15	358 32.9	357 42.1	33.5	268 30.7	00.6		64 55.5	48.9		63 10.8	19.3		Ankaa	353 55.0	S 42 31.3			
16	13 35.3	12 42.4	34.7	283 33.3	00.6		79 57.3	48.8		78 12.9	19.3		Antares	113 15.0	S 26 20.6			
17	28 37.8	27 42.8	35.9	298 35.8	00.5		94 59.2	48.7		93 15.1	19.2							
18	43 40.2	42 43.1	N 1 37.2	313 38.4	N27 00.5		110 01.1	S21 48.6		108 17.3	S21 19.2		Arcturus	146 31.8	N 19 23.0			
19	58 42.7	57 43.5	38.4	328 40.9	00.5		125 02.9	48.6		123 19.4	19.1		Atria	108 52.6	S 68 57.1			
20	73 45.2	72 43.8	39.6	343 43.5	00.4		140 04.8	48.5		138 21.6	19.1		Avior	234 33.5	S 59 23.2			
21	88 47.6	87 44.2	40.8	358 46.0	00.4		155 06.7	48.4		153 23.8	19.0		Bellatrix	279 14.2	N 6 18.7			
22	103 50.1	102 44.5	42.1	13 48.6	00.3		170 08.5	48.3		168 25.9	19.0		Betelgeuse	271 43.9	N 7 23.9			
23	118 52.6	117 44.9	43.3	28 51.1	00.3		185 10.4	48.2		183 28.1	18.9							
4 00	133 55.0	132 45.2	N 1 44.5	43 53.6	N27 00.2		200 12.3	S21 48.1		198 30.3	S21 18.9		Canopus	264 13.3	S 52 40.8			
01	148 57.5	147 45.6	45.7	58 56.2	00.2		215 14.1	48.0		213 32.4	18.8		Capella	281 32.6	N 45 57.6			
02	164 00.0	162 45.9	47.0	73 58.7	00.1		230 16.0	48.0		228 34.6	18.8		Deneb	49 58.9	N 45 08.4			
03	179 02.4	177 46.3	48.2	89 01.2	00.1		245 17.9	47.9		243 36.8	18.8		Denebola	183 13.8	N 14 47.2			
04	194 04.9	192 46.6	49.4	104 03.8	00.0		260 19.7	47.8		258 38.9	18.7		Diphda	349 35.7	S 18 12.2			
05	209 07.4	207 47.0	50.7	119 06.3	27 00.0		275 21.6	47.7		273 41.1	18.7							
06	224 09.8	222 47.4	N 1 51.9	134 08.8	N26 59.9		290 23.5	S21 47.6		288 43.3	S21 18.6		Dubhe	194 39.7	N 61 57.5			
07	239 12.3	237 47.7	53.1	149 11.4	59.9		305 25.4	47.5		303 45.4	18.6		Elnath	279 02.4	N 28 34.5			
08	254 14.7	252 48.1	54.3	164 13.9	59.8		320 27.2	47.4		318 47.6	18.5		Eltanin	91 04.9	N 51 29.5			
09	269 17.2	267 48.4	55.6	179 16.4	59.8		335 29.1	47.3		333 49.7	18.5		Enif	34 26.3	N 9 41.7			
10	284 19.7	282 48.8	56.8	194 19.0	59.7		350 31.0	47.3		348 51.9	18.4		Fomalhaut	16 07.9	S 29 49.9			
11	299 22.1	297 49.2	58.0	209 21.5	59.7		5 32.8	47.2		3 54.1	18.4							
12	314 24.6	312 49.5	N 1 59.2	224 24.0	N26 59.6		20 34.7	S21 47.1		18 56.2	S21 18.3		Gacrux	172 44.6	S 56 53.5			
13	329 27.1	327 49.9	2 00.4	239 26.5	59.6		35 36.6	47.0		33 58.4	18.3		Gienah	176 32.8	S 17 19.5			
14	344 29.5	342 50.3	01.7	254 29.0	59.5		50 38.4	46.9		49 00.6	18.3		Hadar	149 43.9	S 60 10.8			
15	359 32.0	357 50.6	02.9	269 31.6	59.5		65 40.3	46.9		64 02.7	18.2		Hamal	328 45.5	N 23 16.7			
16	14 34.5	12 51.0	04.1	284 34.1	59.4		80 42.2	46.8		79 04.9	18.2		Kaus Aust.	84 36.6	S 34 24.1			
17	29 36.9	27 51.4	05.3	299 36.6	59.4		95 44.0	46.7		94 07.1	18.1							
18	44 39.4	42 51.7	N 2 06.6	314 39.1	N26 59.3		110 45.9	S21 46.6		109 09.2	S21 18.1		Kochab	137 18.4	N 74 18.7			
19	59 41.9	57 52.1	07.8	329 41.6	59.2		125 47.8	46.5		124 11.4	18.0		Markab	14 18.0	N 14 59.7			
20	74 44.3	72 52.5	09.0	344 44.1	59.2		140 49.7	46.4		139 13.6	18.0		Menkar	314 56.4	N 3 56.1			
21	89 46.8	87 52.8	10.2	359 46.6	59.2		155 51.5	46.3		154 15.7	17.9		Menkent	148 54.2	S 36 10.5			
22	104 49.2	102 53.2	11.5	14 49.1	59.1		170 53.4	46.3		169 17.9	17.9		Miaplacidus	221 47.1	S 69 33.5			
23	119 51.7	117 53.6	12.7	29 51.6	59.1		185 55.3	46.2		184 20.1	17.8							
5 00	134 54.2	132 53.9	N 2 13.9	44 54.1	N26 59.0		200 57.1	S21 46.1		199 22.2	S21 17.8		Mirfak	309 36.9	N 49 43.5			
01	149 56.6	147 54.3	15.1	59 56.7	59.0		215 59.0	46.0		214 24.4	17.8		Nunki	76 47.6	S 26 20.7			
02	164 59.1	162 54.7	16.3	74 59.2	58.9		231 00.9	45.9		229 26.5	17.7		Peacock	54 22.1	S 56 51.6			
03	180 01.6	177 55.1	17.6	90 01.7	58.9		246 02.7	45.8		244 28.7	17.7		Pollux	244 15.7	N 28 07.1			
04	195 04.0	192 55.5	18.8	105 04.2	58.8		261 04.6	45.7		259 30.9	17.6		Procyon	245 40.8	N 5 19.4			
05	210 06.5	207 55.8	20.0	120 06.6	58.8		276 06.5	45.7		274 33.0	17.6							
06	225 09.0	222 56.2	N 2 21.2	135 09.1	N26 58.7		291 08.4	S21 45.6		289 35.2	S21 17.5		Rasalhague	96 43.4	N 12 35.2			
07	240 11.4	237 56.6	22.4	150 11.6	58.7		306 10.2	45.5		304 37.4	17.5		Regulus	208 25.3	N 12 09.4			
08	255 13.9	252 57.0	23.7	165 14.1	58.6		321 12.1	45.4		319 39.5	17.4		Rigel	281 49.9	S 8 15.0			
09	270 16.4	267 57.3	24.9	180 16.6	58.6		336 14.0	45.3		334 41.7	17.4		Rigel Kent.	140 45.7	S 60 40.1			
10	285 18.8	282 57.7	26.1	195 19.1	58.5		351 15.8	45.2		349 43.9	17.3		Sabik	102 58.1	S 15 40.6			
11	300 21.3	297 58.1	27.3	210 21.6	58.5		6 17.7	45.1		4 46.0	17.3							
12	315 23.7	312 58.5	N 2 28.5	225 24.1	N26 58.4		21 19.6	S21 45.1		19 48.2	S21 17.3		Schedar	350 25.9	N 56 19.6			
13	330 26.2	327 58.9	29.8	240 26.6	58.4		36 21.4	45.0		34 50.4	17.2		Shaula	97 15.9	S 37 04.4			
14	345 28.7	342 59.3	31.0	255 29.1	58.3		51 23.3	44.9		49 52.5	17.2		Sirius	259 08.3	S 16 40.0			
15	0 31.1	357 59.7	32.2	270 31.5	58.3		66 25.2	44.8		64 54.7	17.1		Spica	159 12.8	S 10 57.5			
16	15 33.6	13 00.0	33.4	285 34.0	58.2		81 27.1	44.7		79 56.9	17.1		Suhail	223 21.1	S 43 16.6			
17	30 36.1	28 00.4	34.6	300 36.5	58.2		96 28.9	44.6		94 59.0	17.0							
18	45 38.5	43 00.8	N 2 35.8	315 39.0	N26 58.1		111 30.8	S21 44.5		110 01.2	S21 17.0		Vega	81 06.1	N 38 44.7			
19	60 41.0	58 01.2	37.1	330 41.5	58.1		126 32.7	44.4		125 03.4	16.9		Zuben'ubi	137 49.2	S 15 52.7			
20	75 43.5	73 01.6	38.3	345 43.9	58.0		141 34.5	44.4		140 05.5	16.9							
21	90 45.9	88 02.0	39.5	0 46.4	58.0		156 36.4	44.3		155 07.7	16.9							
22	105 48.4	103 02.4	40.7	15 48.9	57.9		171 38.											

G.M.T.		SUN		MOON						Lat.	Twilight		Sun-rise	Moonrise								
		G.H.A.	Dec.	G.H.A.	φ	Dec.	d	H.P.	Naut.		Civil	3		4	5	6						
d	h	°	'	°	'	°	'	°	'	°	'	h	m	h	m	h	m	h	m			
F R I D A Y	3 00	176	32.2	S16	39.0	333	08.4	14.3	N	8	42.1	8.6	54.5	N 72	06 59	08 26	10 05	19 09	20 47	22 25	24 07	
	01	191	32.1		38.2	347	41.7	14.3		8	33.5	8.7	54.5	N 70	06 53	08 09	09 30	19 18	20 49	22 21	23 57	
	02	206	32.1		37.5	2	15.0	14.3		8	24.8	8.8	54.5	68	06 47	07 56	09 05	19 25	20 51	22 18	23 48	
	03	221	32.0	..	36.8	16	48.3	14.3		8	16.0	8.7	54.5	66	06 42	07 45	08 46	19 30	20 53	22 16	23 42	
	04	236	31.9		36.1	31	21.6	14.4		8	07.3	8.8	54.5	64	06 38	07 36	08 31	19 35	20 54	22 14	23 36	
	05	251	31.8		35.3	45	55.0	14.3		7	58.5	8.9	54.5	62	06 34	07 28	08 18	19 39	20 55	22 12	23 31	
	06	266	31.8	S16	34.6	60	28.3	14.4	N	7	49.6	8.9	54.5	60	06 30	07 21	08 07	19 43	20 56	22 10	23 26	
	07	281	31.7		33.9	75	01.7	14.3		7	40.7	8.9	54.6	N 58	06 27	07 14	07 58	19 46	20 57	22 09	23 22	
	08	296	31.6		33.1	89	35.0	14.4		7	31.8	8.9	54.6	56	06 24	07 09	07 49	19 49	20 58	22 08	23 19	
	09	311	31.6	..	32.4	104	08.4	14.4		7	22.9	9.0	54.6	54	06 21	07 04	07 42	19 52	20 59	22 07	23 16	
	10	326	31.5		31.7	118	41.8	14.4		7	13.9	9.0	54.6	52	06 19	06 59	07 36	19 54	20 59	22 06	23 13	
	11	341	31.4		30.9	133	15.2	14.4		7	04.9	9.1	54.6	50	06 16	06 55	07 29	19 56	21 00	22 05	23 11	
	12	356	31.4	S16	30.2	147	48.6	14.4	N	6	55.8	9.1	54.6	45	06 11	06 46	07 17	20 01	21 01	22 03	23 06	
	13	11	31.3		29.4	162	22.0	14.4		6	46.7	9.1	54.6	N 40	06 05	06 37	07 06	20 04	21 02	22 01	23 01	
	14	26	31.3		28.7	176	55.4	14.4		6	37.6	9.2	54.6	35	06 00	06 30	06 57	20 08	21 03	22 00	22 57	
	15	41	31.2	..	28.0	191	28.8	14.4		6	28.4	9.2	54.7	30	05 55	06 24	06 49	20 10	21 04	21 58	22 54	
	16	56	31.1		27.2	206	02.2	14.4		6	19.2	9.2	54.7	20	05 45	06 12	06 34	20 15	21 05	21 56	22 48	
	17	71	31.1		26.5	220	35.6	14.4		6	10.0	9.2	54.7	N 10	05 35	06 00	06 22	20 20	21 07	21 54	22 43	
	18	86	31.0	S16	25.8	235	09.0	14.5	N	6	00.8	9.3	54.7	0	05 24	05 49	06 10	20 24	21 08	21 52	22 38	
	19	101	30.9		25.0	249	42.5	14.4		5	51.5	9.3	54.7	S 10	05 11	05 37	05 59	20 28	21 09	21 51	22 33	
	20	116	30.9		24.3	264	15.9	14.4		5	42.2	9.3	54.7	20	04 55	05 23	05 46	20 33	21 10	21 49	22 28	
	21	131	30.8	..	23.5	278	49.3	14.4		5	32.9	9.4	54.8	30	04 35	05 05	05 31	20 38	21 12	21 47	22 23	
	22	146	30.7		22.8	293	22.7	14.5		5	23.5	9.4	54.8	35	04 22	04 55	05 22	20 40	21 13	21 45	22 19	
	23	161	30.7		22.1	307	56.2	14.4		5	14.1	9.4	54.8	40	04 06	04 43	05 12	20 43	21 14	21 44	22 16	
	24	176	30.6	S16	21.3	322	29.6	14.4	N	5	04.7	9.4	54.8	45	03 47	04 28	05 01	20 47	21 15	21 43	22 12	
S A T U R D A Y	00	191	30.6		20.6	337	03.0	14.5		4	55.3	9.5	54.8	S 50	03 21	04 09	04 47	20 52	21 16	21 41	22 07	
	01	206	30.5		19.8	351	36.5	14.4		4	45.8	9.5	54.8	52	03 07	04 00	04 40	20 54	21 17	21 40	22 04	
	02	221	30.4	..	19.1	6	09.9	14.4		4	36.3	9.5	54.8	54	02 52	03 50	04 32	20 56	21 17	21 39	22 02	
	03	236	30.4		18.3	20	43.3	14.4		4	26.8	9.6	54.9	56	02 33	03 38	04 24	20 58	21 18	21 38	21 59	
	04	251	30.3		17.6	35	16.7	14.5		4	17.2	9.5	54.9	58	02 09	03 24	04 15	21 01	21 19	21 37	21 56	
	05	266	30.3	S16	16.8	49	50.2	14.4	N	4	07.7	9.6	54.9	S 60	01 33	03 08	04 04	21 04	21 20	21 36	21 53	
	06	281	30.2		16.1	64	23.6	14.4		3	58.1	9.6	54.9	Lat.	Sun-set	Twilight	Moonset					
	07	296	30.1		15.4	78	57.0	14.4		3	48.5	9.6	54.9			Civil	Naut.	3	4	5	6	
	08	311	30.1	..	14.6	93	30.4	14.4		3	38.9	9.7	54.9	°	h	m	h	h	m	h	m	
	09	326	30.0		13.9	108	03.8	14.4		3	29.2	9.7	55.0	N 72	14 24	16 04	17 30	09 36	09 30	09 24	09 17	
	10	341	30.0		13.1	122	37.2	14.4		3	19.5	9.7	55.0	N 70	14 59	16 20	17 37	09 25	09 25	09 24	09 23	
	11	356	29.9	S16	12.4	137	10.6	14.4	N	3	09.8	9.7	55.0	68	15 24	16 33	17 42	09 17	09 21	09 25	09 28	
	12	11	29.9		11.6	151	44.0	14.4		3	00.1	9.7	55.0	66	15 43	16 44	17 47	09 10	09 18	09 25	09 33	
	13	26	29.8		10.9	166	17.4	14.3		2	50.4	9.7	55.0	64	15 58	16 53	17 51	09 04	09 15	09 25	09 36	
	14	41	29.7	..	10.1	180	50.7	14.4		2	40.7	9.8	55.1	62	16 11	17 01	17 55	08 59	09 13	09 26	09 39	
	15	56	29.7		09.4	195	24.1	14.3		2	30.9	9.8	55.1	60	16 22	17 08	17 58	08 54	09 11	09 26	09 42	
	16	71	29.6		08.6	209	57.4	14.4		2	21.1	9.8	55.1	N 58	16 31	17 14	18 02	08 50	09 09	09 26	09 45	
	17	86	29.6	S16	07.9	224	30.8	14.3	N	2	11.3	9.8	55.1	56	16 39	17 20	18 04	08 47	09 07	09 26	09 47	
	18	101	29.5		07.1	239	04.1	14.3		2	01.5	9.8	55.1	54	16 47	17 25	18 07	08 44	09 05	09 27	09 49	
	19	116	29.5		06.4	253	37.4	14.3		1	51.7	9.8	55.1	52	16 53	17 29	18 10	08 41	09 04	09 27	09 50	
	20	131	29.4	..	05.6	268	10.7	14.3		1	41.9	9.9	55.2	50	16 59	17 34	18 12	08 38	09 03	09 27	09 52	
	21	146	29.4		04.9	282	44.0	14.3		1	32.0	9.8	55.2	45	17 12	17 43	18 18	08 32	09 00	09 27	09 56	
	22	161	29.3		04.1	297	17.3	14.2		1	22.2	9.9	55.2	N 40	17 22	17 51	18 23	08 27	08 58	09 28	09 59	
	S U N D A Y	00	191	29.2		02.6	326	23.8	14.2		1	02.4	9.9	55.2	35	17 32	17 58	18 28	08 23	08 56	09 28	10 01
		01	206	29.1		01.8	340	57.0	14.2		0	52.5	9.9	55.3	30	17 40	18 05	18 33	08 19	08 54	09 28	10 03
02		221	29.1	..	01.1	355	30.2	14.2		0	42.6	9.9	55.3	20	17 54	18 16	18 43	08 13	08 51	09 29	10 07	
03		236	29.0	16	00.3	10	03.4	14.2		0	32.7	9.9	55.3	N 10	18 06	18 28	18 53	08 07	08 48	09 29	10 11	
04		251	29.0	15	59.6	24	36.6	14.2		0	22.8	10.0	55.3	0	18 17	18 39	19 04	08 01	08 45	09 29	10 14	
05		266	28.9	S15	58.8	39	09.8	14.1	N	0	12.8	9.9	55.3	S 10	18 29	18 51	19 17	07 56	08 42	09 29	10 17	
06		281	28.9		58.1	53	42.9	14.2	N	0	02.9	10.0	55.4	20	18 42	19 05	19 32	07 50	08 39	09 30	10 21	
07		296	28.8		57.3	68	16.1	14.1	S	0	07.1	9.9	55.4	30	18 56	19 22	19 52	07 43	08 36	09 30	10 25	
08		311	28.8	..	56.5	82	49.2	14.1		0	17.0	10.0	55.4	35	19 05	19 32	20 05	07 39	08 34	09 30	10 27	
09		326	28.7		55.8	97	22.3	14.0		0	27.0	9.9	55.4	40	19 15	19 44	20 21	07 35	08 32	09 30	10 30	
10		341	28.7		55.0	111	55.3	14.1		0	36.9	10.0	55.5	45	19 26	19 59	20 40	07 29	08 29	09 30	10 33	
11		356	28.6	S15	54.3	126	28.4	14.0	S	0	46.9	10.0	55.5	S 50	19 40	20 17	21 05	07 23	08 26	09 31	10	

G.M.T.		ARIES		VENUS -4.1		MARS -0.4		JUPITER -1.5		SATURN +0.8		STARS		
		G.H.A.		G.H.A.	Dec.	G.H.A.	Dec.	G.H.A.	Dec.	G.H.A.	Dec.	Name	S.H.A.	Dec.
d	h													
MONDAY	6 00	135 53.3	133 03.2 N	2 43.1	45 53.8 N26 57.8	201 42.0 S21 44.0	200 14.2 S21 16.7	Acamar	315 48.4	S 40 28.0				
	01	150 55.8	148 03.6	44.4	60 56.3 57.8	216 43.9 43.9	215 16.4 16.7	Achernar	335 56.5	S 57 26.4				
	02	165 58.2	163 04.0	45.6	75 58.7 57.7	231 45.8 43.8	230 18.6 16.6	Acruz	173 53.0	S 62 52.8				
	03	181 00.7	178 04.4	46.8	91 01.2 57.7	246 47.7 43.8	245 20.7 16.6	Adhara	255 43.3	S 28 55.4				
	04	196 03.2	193 04.8	48.0	106 03.7 57.6	261 49.5 43.7	260 22.9 16.5	Aldebaran	291 34.7	N 16 25.8				
	05	211 05.6	208 05.2	49.2	121 06.1 57.6	276 51.4 43.6	275 25.1 16.5							
	06	226 08.1	223 05.6 N	2 50.4	136 08.6 N26 57.5	291 53.3 S21 43.5	290 27.2 S21 16.4	Alioth	166 55.1	N 56 10.0				
	07	241 10.6	238 06.0	51.7	151 11.1 57.5	306 55.1 43.4	305 29.4 16.4	Alkaid	153 29.9	N 49 30.2				
	08	256 13.0	253 06.4	52.9	166 13.5 57.4	321 57.0 43.3	320 31.6 16.4	Al Na'ir	28 33.8	S 47 09.1				
	09	271 15.5	268 06.8	54.1	181 16.0 57.4	336 58.9 43.2	335 33.7 16.3	Anilam	276 26.3	S 1 13.8				
	10	286 18.0	283 07.2	55.3	196 18.4 57.3	352 00.8 43.2	350 35.9 16.3	Alphard	218 34.6	S 8 29.5				
	11	301 20.4	298 07.6	56.5	211 20.9 57.2	7 02.6 43.1	5 38.1 16.2							
	12	316 22.9	313 08.0 N	2 57.7	226 23.3 N26 57.2	22 04.5 S21 43.0	20 40.2 S21 16.2	Alphecca	126 44.6	N 26 50.6				
	13	331 25.3	328 08.4	2 58.9	241 25.8 57.1	37 06.4 42.9	35 42.4 16.1	Alpheratz	358 24.7	N 28 52.5				
	14	346 27.8	343 08.8	3 00.1	256 28.2 57.1	52 08.3 42.8	50 44.6 16.1	Altair	62 47.1	N 8 45.8				
	15	1 30.3	358 09.2	01.4	271 30.7 57.0	67 10.1 42.7	65 46.7 16.0	Ankaa	353 55.0	S 42 31.3				
	16	16 32.7	13 09.6	02.6	286 33.1 57.0	82 12.0 42.6	80 48.9 16.0	Antares	113 14.9	S 26 20.6				
	17	31 35.2	28 10.0	03.8	301 35.6 56.9	97 13.9 42.5	95 51.1 15.9							
	18	46 37.7	43 10.4 N	3 05.0	316 38.0 N26 56.9	112 15.7 S21 42.5	110 53.2 S21 15.9	Arcturus	146 31.8	N 19 23.0				
	19	61 40.1	58 10.8	06.2	331 40.4 56.8	127 17.6 42.4	125 55.4 15.9	Atria	108 52.5	S 68 57.1				
	20	76 42.6	73 11.3	07.4	346 42.9 56.8	142 19.5 42.3	140 57.6 15.8	Avior	234 33.5	S 59 23.2				
	21	91 45.1	88 11.7	08.6	1 45.3 56.7	157 21.4 42.2	155 59.7 15.8	Bellatrix	279 14.3	N 6 18.7				
	22	106 47.5	103 12.1	09.8	16 47.8 56.7	172 23.2 42.1	171 01.9 15.7	Betelgeuse	271 43.9	N 7 23.9				
	23	121 50.0	118 12.5	11.0	31 50.2 56.6	187 25.1 42.0	186 04.1 15.7							
TUESDAY	7 00	136 52.4	133 12.9 N	3 12.3	46 52.6 N26 56.6	202 27.0 S21 41.9	201 06.2 S21 15.6	Canopus	264 13.3	S 52 40.8				
	01	151 54.9	148 13.3	13.5	61 55.1 56.5	217 28.9 41.8	216 08.4 15.6	Capella	281 32.6	N 45 57.6				
	02	166 57.4	163 13.8	14.7	76 57.5 56.5	232 30.7 41.8	231 10.6 15.5	Deneb	49 58.9	N 45 08.4				
	03	181 59.8	178 14.2	15.9	91 59.9 56.4	247 32.6 41.7	246 12.7 15.5	Denebola	183 13.7	N 14 47.2				
	04	197 02.3	193 14.6	17.1	107 02.4 56.4	262 34.5 41.6	261 14.9 15.4	Diphda	349 35.7	S 18 12.2				
	05	212 04.8	208 15.0	18.3	122 04.8 56.3	277 36.4 41.5	276 17.1 15.4							
	06	227 07.2	223 15.4 N	3 19.5	137 07.2 N26 56.3	292 38.2 S21 41.4	291 19.3 S21 15.3	Dubhe	194 39.6	N 61 57.5				
	07	242 09.7	238 15.9	20.7	152 09.6 56.2	307 40.1 41.3	306 21.4 15.3	Elnath	279 02.4	N 28 34.5				
	08	257 12.2	253 16.3	21.9	167 12.1 56.2	322 42.0 41.2	321 23.6 15.3	Elnatan	91 04.9	N 51 29.5				
	09	272 14.6	268 16.7	23.1	182 14.5 56.1	337 43.9 41.2	336 25.8 15.2	Enif	34 26.3	N 9 41.7				
	10	287 17.1	283 17.1	24.3	197 16.9 56.1	352 45.7 41.1	351 27.9 15.2	Fomalhaut	16 07.9	S 29 49.9				
	11	302 19.6	298 17.6	25.5	212 19.3 56.0	7 47.6 41.0	6 30.1 15.1							
	12	317 22.0	313 18.0 N	3 26.8	227 21.7 N26 56.0	22 49.5 S21 40.9	21 32.3 S21 15.1	Gacrux	172 44.6	S 56 53.5				
	13	332 24.5	328 18.4	28.0	242 24.1 55.9	37 51.4 40.8	36 34.4 15.0	Gienah	176 32.8	S 17 19.5				
	14	347 26.9	343 18.9	29.2	257 26.6 55.9	52 53.2 40.7	51 36.6 15.0	Hadar	149 43.8	S 60 10.8				
	15	2 29.4	358 19.3	30.4	272 29.0 55.8	67 55.1 40.6	66 38.8 14.9	Hamal	328 45.5	N 23 16.7				
	16	17 31.9	13 19.7	31.6	287 31.4 55.8	82 57.0 40.5	81 40.9 14.9	Kaus Aust.	84 36.6	S 34 24.1				
	17	32 34.3	28 20.1	32.8	302 33.8 55.7	97 58.9 40.5	96 43.1 14.8							
	18	47 36.8	43 20.6 N	3 34.0	317 36.2 N26 55.6	113 00.7 S21 40.4	111 45.3 S21 14.8	Kochab	137 18.4	N 74 18.7				
	19	62 39.3	58 21.0	35.2	332 38.6 55.6	128 02.6 40.3	126 47.5 14.8	Markab	14 18.0	N 14 59.7				
	20	77 41.7	73 21.4	36.4	347 41.0 55.5	143 04.5 40.2	141 49.6 14.7	Menkar	314 56.4	N 3 56.1				
	21	92 44.2	88 21.9	37.6	2 43.4 55.5	158 06.4 40.1	156 51.8 14.7	Menkent	148 54.1	S 36 10.6				
	22	107 46.7	103 22.3	38.8	17 45.8 55.4	173 08.2 40.0	171 54.0 14.6	Miaplacidus	221 47.1	S 69 33.5				
	23	122 49.1	118 22.8	40.0	32 48.2 55.4	188 10.1 39.9	186 56.1 14.6							
WEDNESDAY	8 00	137 51.6	133 23.2 N	3 41.2	47 50.6 N26 55.3	203 12.0 S21 39.8	201 58.3 S21 14.5	Mirfak	309 37.0	N 49 43.5				
	01	152 54.0	148 23.6	42.4	62 53.0 55.3	218 13.9 39.8	217 00.5 14.5	Nunki	76 47.6	S 26 20.7				
	02	167 56.5	163 24.1	43.6	77 55.4 55.2	233 15.7 39.7	232 02.6 14.4	Peacock	54 22.1	S 56 51.6				
	03	182 59.0	178 24.5	44.8	92 57.8 55.2	248 17.6 39.6	247 04.8 14.4	Pollux	244 15.7	N 28 07.1				
	04	198 01.4	193 25.0	46.0	108 00.2 55.1	263 19.5 39.5	262 07.0 14.3	Procyon	245 40.8	N 5 19.4				
	05	213 03.9	208 25.4	47.2	123 02.6 55.1	278 21.4 39.4	277 09.2 14.3							
	06	228 06.4	223 25.9 N	3 48.4	138 05.0 N26 55.0	293 23.3 S21 39.3	292 11.3 S21 14.3	Rasalhague	96 43.4	N 12 35.2				
	07	243 08.8	238 26.3	49.6	153 07.4 55.0	308 25.1 39.2	307 13.5 14.2	Regulus	208 25.3	N 12 09.4				
	08	258 11.3	253 26.7	50.8	168 09.8 54.9	323 27.0 39.1	322 15.7 14.2	Rigel	281 49.9	S 8 15.0				
	09	273 13.8	268 27.2	52.0	183 12.1 54.9	338 28.9 39.1	337 17.8 14.1	Rigel Kent.	140 45.7	S 60 40.2				
	10	288 16.2	283 27.6	53.2	198 14.5 54.8	353 30.8 39.0	352 20.0 14.1	Sabik	102 58.1	S 15 40.6				
	11	303 18.7	298 28.1	54.4	213 16.9 54.8	8 32.6 38.9	7 22.2 14.0							
	12	318 21.2	313 28.5 N	3 55.6	228 19.3 N26 54.7	23 34.5 S21 38.8	22 24.3 S21 14.0	Schedar	350 25.9	N 56 19.6				
	13	333 23.6	328 29.0	56.8	243 21.7 54.7	38 36.4 38.7	37 26.5 13.9	Shaula	97 15.9	S 37 04.4				
	14	348 26.1	343 29.4	58.0	258 24.1 54.6	53 38.3 38.6	52 28.7 13.9	Sirius	259 08.3	S 16 40.0				
	15	3 28.5	358 29.9	59.2	273 26.4 54.5	68 40.1 38.5	67 30.9 13.8	Spica	159 12.8	S 10 57.5				
	16	18 31.0	13 30.3	4 00.4	288 28.8 54.5	83 42.0 38.4	82 33.0 13.8	Suhail	223 21.1	S 43 16.6				
	17	33 33.5	28 30.8	01.6	303 31.2 54.4	98 43.9 38.4	97 35.2 13.8							
	18	48 35.9	43 31.3 N	4 02.8	318 33.6 N26 54.4	113 45.8 S21 38.3	112 37.4 S21 13.7	Vega	81 06.1	N 38 44.7				
	19	63 38.4	58 31.7	04.0	333 35.9 54.3	128 47.7 38.2	127 39.5 13.7	Zuben'ubi	137 49.2	S 15 52.8				
	20	78 40.9	73 32.2	05.2	348 38.3 54.3	143 49.5 38.1	142 41.7 13.6							
	21	93 43.3	88 32.6	06.4	3 40.7 54.2	158 51.4 38.0	157 43.9 13.6							
	22	108 45.8	103 33.1	07.6	18 43.1 54.2	173 53.3 37.9	172 46.1 13.5	Venus	356 20.5	15 07				
	23	123 48.3	118 33.6	08.8	33 45.4 54.1	188 55.2 37.8	187 48.2 13.5	Mars	270 00.2	20 49				
								Jupiter	65 34.6	10 29				
								Saturn	64 13.8	10 34				
Mer. Pass. 14 50.1														
		v 0.4	d 1.2		v 2.4 d 0.1		v 1.9 d 0.1		v 2.2 d 0.0					

G.M.T.		SUN		MOON					Lat.	Twilight		Sun-rise	Moonrise									
		G.H.A.	Dec.	G.H.A.	<i>v</i>	Dec.	<i>d</i>	H.P.		Naut.	Civil		6	7	8	9						
d	h	°	'	°	'	°	'	°	'	°	'	h	m	h	m	h	m	h	m	h	m	
MONDAY	6	00	176	28.1	S15	45.1	301	02.8	13.7	S	2	46.6	10.0	55.8	N 72	06 48	08 12	09 44	24 07	00 07	01 55	03 51
	01	01	191	28.0		44.3	315	35.5	13.7		2	56.6	9.9	55.8	N 70	06 43	07 58	09 15	23 57	25 36	01 36	03 19
	02	02	206	28.0		43.6	330	08.2	13.6		3	06.5	10.0	55.8	68	06 38	07 46	08 53	23 48	25 21	01 21	02 57
	03	03	221	27.9	..	42.8	344	40.8	13.6		3	16.5	9.9	55.8	66	06 34	07 36	08 36	23 42	25 09	01 09	02 39
	04	04	236	27.9		42.0	359	13.4	13.5		3	26.4	9.9	55.8	64	06 30	07 28	08 22	23 36	25 00	01 00	02 25
	05	05	251	27.9		41.3	13	45.9	13.5		3	36.3	10.0	55.9	62	06 27	07 20	08 10	23 31	24 51	00 51	02 13
	06	06													60	06 24	07 14	08 00	23 26	24 44	00 44	02 03
	07	07	266	27.8	S15	40.5	28	18.4	13.5	S	3	46.3	9.9	55.9	N 58	06 22	07 08	07 51	23 22	24 38	00 38	01 54
	08	08	281	27.8		39.7	42	50.9	13.5		3	56.2	9.9	55.9	56	06 19	07 03	07 43	23 19	24 32	00 32	01 46
	09	09	296	27.7		39.0	57	23.4	13.4		4	06.1	9.9	55.9	54	06 17	06 59	07 36	23 16	24 27	00 27	01 39
	10	10	311	27.7	..	38.2	71	55.8	13.3		4	16.0	9.9	56.0	52	06 14	06 54	07 30	23 13	24 23	00 23	01 33
	11	11	326	27.6		37.4	86	28.1	13.4		4	25.9	9.9	56.0	50	06 12	06 50	07 25	23 11	24 19	00 19	01 28
	12	12	341	27.6		36.7	101	00.5	13.2		4	35.7	9.9	56.0	45	06 07	06 42	07 13	23 06	24 10	00 10	01 16
	13	13	356	27.6	S15	35.9	115	32.7	13.3	S	4	45.6	9.8	56.1	N 40	06 02	06 34	07 03	23 01	24 03	00 03	01 06
	14	14	11	27.5		35.1	130	05.0	13.2		4	55.4	9.9	56.1	35	05 58	06 28	06 54	22 57	23 57	24 58	00 58
	15	15	26	27.5		34.4	144	37.2	13.2		5	05.3	9.8	56.1	30	05 53	06 22	06 47	22 54	23 51	24 51	00 51
	16	16	41	27.4	..	33.6	159	09.4	13.1		5	15.1	9.8	56.1	20	05 44	06 11	06 33	22 48	23 42	24 38	00 38
	17	17	56	27.4		32.8	173	41.5	13.0		5	24.9	9.8	56.2	N 10	05 35	06 00	06 22	22 43	23 34	24 27	00 27
	18	18	71	27.4		32.0	188	13.5	13.1		5	34.7	9.7	56.2	0	05 24	05 49	06 11	22 38	23 26	24 16	00 16
	19	19	86	27.3	S15	31.3	202	45.6	13.0	S	5	44.4	9.8	56.2	S 10	05 12	05 38	06 00	22 33	23 18	24 06	00 06
	20	20	101	27.3		30.5	217	17.6	12.9		5	54.2	9.7	56.2	20	04 57	05 24	05 47	22 28	23 10	23 55	24 45
	21	21	116	27.3		29.7	231	49.5	12.9		6	03.9	9.7	56.3	30	04 38	05 08	05 34	22 23	23 01	23 43	24 29
	22	22	131	27.2	..	28.9	246	21.4	12.8		6	13.6	9.7	56.3	35	04 26	04 58	05 26	22 19	22 56	23 36	24 21
23	23	146	27.2		28.2	260	53.2	12.8		6	23.3	9.7	56.3	40	04 11	04 47	05 16	22 16	22 50	23 28	24 11	
		161	27.1		27.4	275	25.0	12.8		6	33.0	9.6	56.4	45	03 52	04 33	05 05	22 12	22 43	23 18	24 00	
TUESDAY	7	00	176	27.1	S15	26.6	289	56.8	12.7	S	6	42.6	9.7	56.4	S 50	03 28	04 15	04 52	22 07	22 35	23 07	23 46
	01	01	191	27.1		25.8	304	28.5	12.6		6	52.3	9.6	56.4	52	03 16	04 07	04 46	22 04	22 31	23 02	23 39
	02	02	206	27.0		25.1	319	00.1	12.6		7	01.9	9.5	56.4	54	03 01	03 57	04 39	22 02	22 27	22 56	23 32
	03	03	221	27.0	..	24.3	333	31.7	12.6		7	11.4	9.6	56.5	56	02 44	03 46	04 31	21 59	22 22	22 50	23 24
	04	04	236	27.0		23.5	348	03.3	12.5		7	21.0	9.5	56.5	58	02 22	03 33	04 22	21 56	22 17	22 43	23 15
	05	05	251	26.9		22.7	2	34.8	12.4		7	30.5	9.5	56.5	S 60	01 53	03 18	04 12	21 53	22 12	22 35	23 05
	06	06	266	26.9	S15	21.9	17	06.2	12.4	S	7	40.0	9.5	56.6								
	07	07	281	26.9		21.2	31	37.6	12.4		7	49.5	9.4	56.6								
	08	08	296	26.8		20.4	46	09.0	12.2		7	58.9	9.4	56.6								
	09	09	311	26.8	..	19.6	60	40.2	12.3		8	08.3	9.4	56.6								
	10	10	326	26.8		18.8	75	11.5	12.1		8	17.7	9.4	56.7								
	11	11	341	26.7		18.0	89	42.6	12.1		8	27.1	9.3	56.7								
	12	12	356	26.7	S15	17.3	104	13.7	12.1	S	8	36.4	9.3	56.7	N 70	15 15	16 32	17 47	09 23	09 23	09 23	09 26
	13	13	11	26.7		16.5	118	44.8	12.0		8	45.7	9.2	56.8	68	15 37	16 44	17 52	09 28	09 33	09 39	09 49
	14	14	26	26.6		15.7	133	15.8	11.9		8	54.9	9.3	56.8	66	15 54	16 53	17 56	09 33	09 41	09 52	10 08
	15	15	41	26.6	..	14.9	147	46.7	11.9		9	04.2	9.1	56.8	64	16 08	17 02	17 59	09 36	09 48	10 03	10 23
	16	16	56	26.6		14.1	162	17.6	11.8		9	13.3	9.2	56.9	62	16 20	17 09	18 02	09 39	09 54	10 12	10 35
	17	17	71	26.5		13.3	176	48.4	11.8		9	22.5	9.1	56.9	60	16 30	17 15	18 05	09 42	10 00	10 20	10 46
	18	18	86	26.5	S15	12.6	191	19.2	11.7	S	9	31.6	9.1	56.9	N 58	16 38	17 21	18 08	09 45	10 04	10 27	10 56
	19	19	101	26.5		11.8	205	49.9	11.6		9	40.7	9.0	56.9	56	16 46	17 26	18 10	09 47	10 08	10 33	11 04
	20	20	116	26.5		11.0	220	20.5	11.6		9	49.7	9.0	57.0	54	16 53	17 30	18 12	09 49	10 12	10 39	11 11
	21	21	131	26.4	..	10.2	234	51.1	11.5		9	58.7	8.9	57.0	52	16 59	17 35	18 15	09 50	10 16	10 44	11 18
	22	22	146	26.4		09.4	249	21.6	11.4		10	07.6	8.9	57.0	50	17 04	17 38	18 17	09 52	10 19	10 49	11 24
23	23	161	26.4		08.6	263	52.0	11.4		10	16.5	8.9	57.1	45	17 16	17 47	18 22	09 56	10 25	10 59	11 36	
WEDNESDAY	8	00	176	26.3	S15	07.8	278	22.4	11.3	S10	25.4	8.8	57.1	N 40	17 26	17 54	18 26	09 59	10 31	11 07	11 47	
	01	01	191	26.3		07.1	292	52.7	11.2		10	34.2	8.8	57.1	35	17 35	18 01	18 31	10 01	10 36	11 14	11 56
	02	02	206	26.3		06.3	307	22.9	11.2		10	43.0	8.7	57.2	30	17 42	18 07	18 35	10 03	10 40	11 20	12 04
	03	03	221	26.3	..	05.5	321	53.1	11.1		10	51.7	8.7	57.2	20	17 55	18 18	18 44	10 07	10 48	11 31	12 18
	04	04	236	26.2		04.7	336	23.2	11.0		11	00.4	8.7	57.2	N 10	18 07	18 29	18 54	10 11	10 54	11 41	12 30
	05	05	251	26.2		03.9	350	53.2	11.0		11	09.1	8.6	57.3	0	18 18	18 39	19 04	10 14	11 01	11 50	12 42
	06	06	266	26.2	S15	03.1	5	23.2	10.9	S11	17.7	8.5	57.3	S 10	18 29	18 50	19 16	10 17	11 07	11 59	12 53	
	07	07	281	26.1		02.3	19	53.1	10.8		11	26.2	8.5	57.3	20	18 41	19 04	19 31	10 21	11 14	12 08	13 05
	08	08	296	26.1		01.5	34	22.9	10.8		11	34.7	8.4	57.4	30	18 54	19 20	19 50	10 25	11 21</		

G.M.T.	ARIES			VENUS -4.2			MARS -0.2			JUPITER -1.5			SATURN +0.8			STARS		
	G.H.A.	G.H.A.	Dec.	G.H.A.	G.H.A.	Dec.	G.H.A.	G.H.A.	Dec.	G.H.A.	G.H.A.	Dec.	G.H.A.	G.H.A.	Dec.	Name	S.H.A.	Dec.
d h	° ' "	° ' "	° ' "	° ' "	° ' "	° ' "	° ' "	° ' "	° ' "	° ' "	° ' "	° ' "	° ' "	° ' "	° ' "		° ' "	° ' "
9 00	138 50.7	133 34.0	N 4 10.0	48 47.8	N 26 54.1		203 57.1	S 21 37.7		202 50.4	S 21 13.4		Acamar	315 48.4	S 40 28.0			
01	153 53.2	148 34.5	11.2	63 50.1	54.0		218 58.9	37.7		217 52.6	13.4		Achernar	335 56.5	S 57 26.4			
02	168 55.7	163 34.9	12.4	78 52.5	54.0		234 00.8	37.6		232 54.7	13.4		Acrux	173 53.0	S 62 52.8			
03	183 58.1	178 35.4	.. 13.6	93 54.9	.. 53.9		249 02.7	.. 37.5		247 56.9	.. 13.3		Adhara	255 43.3	S 28 55.4			
04	199 00.6	193 35.9	14.8	108 57.2	53.9		264 04.6	37.4		262 59.1	13.3		Aldebaran	291 34.7	N 16 25.8			
05	214 03.0	208 36.3	16.0	123 59.6	53.8		279 06.4	37.3		278 01.3	13.2							
06	229 05.5	223 36.8	N 4 17.2	139 02.0	N 26 53.7		294 08.3	S 21 37.2		293 03.4	S 21 13.2		Alioth	166 55.1	N 56 10.0			
07	244 08.0	238 37.3	18.4	154 04.3	53.7		309 10.2	37.1		308 05.6	13.1		Alkaid	153 29.9	N 49 30.2			
08	259 10.4	253 37.7	19.6	169 06.7	53.6		324 12.1	37.0		323 07.8	13.1		Al Na'ir	28 33.8	S 47 09.1			
09	274 12.9	268 38.2	.. 20.8	184 09.0	.. 53.6		339 14.0	.. 36.9		338 09.9	.. 13.0		Alnilam	276 26.3	S 1 13.8			
10	289 15.4	283 38.7	21.9	199 11.4	53.5		354 15.8	36.9		353 12.1	13.0		Alphard	218 34.6	S 8 29.5			
11	304 17.8	298 39.2	23.1	214 13.7	53.5		9 17.7	36.8		8 14.3	12.9							
12	319 20.3	313 39.6	N 4 24.3	229 16.1	N 26 53.4		24 19.6	S 21 36.7		23 16.5	S 21 12.9		Alphecca	126 44.6	N 26 50.6			
13	334 22.8	328 40.1	25.5	244 18.4	53.4		39 21.5	36.6		38 18.6	12.9		Alpheratz	358 24.7	N 28 52.5			
14	349 25.2	343 40.6	26.7	259 20.8	53.3		54 23.4	36.5		53 20.8	12.8		Altair	62 47.1	N 8 45.8			
15	4 27.7	358 41.1	.. 27.9	274 23.1	.. 53.3		69 25.2	.. 36.4		68 23.0	.. 12.8		Ankaa	353 55.0	S 42 31.3			
16	19 30.1	13 41.5	29.1	289 25.4	53.2		84 27.1	36.3		83 25.2	12.7		Antares	113 14.9	S 26 20.6			
17	34 32.6	28 42.0	30.3	304 27.8	53.2		99 29.0	36.2		98 27.3	12.7							
18	49 35.1	43 42.5	N 4 31.5	319 30.1	N 26 53.1		114 30.9	S 21 36.2		113 29.5	S 21 12.6		Arcturus	146 31.7	N 19 23.0			
19	64 37.5	58 43.0	32.7	334 32.5	53.1		129 32.8	36.1		128 31.7	12.6		Atria	108 52.5	S 68 57.1			
20	79 40.0	73 43.5	33.9	349 34.8	53.0		144 34.6	36.0		143 33.8	12.5		Avior	234 33.5	S 59 23.2			
21	94 42.5	88 43.9	.. 35.0	4 37.1	.. 52.9		159 36.5	.. 35.9		158 36.0	.. 12.5		Bellatrix	279 14.3	N 6 18.7			
22	109 44.9	103 44.4	36.2	19 39.5	52.9		174 38.4	35.8		173 38.2	12.4		Betelgeuse	271 43.9	N 7 23.9			
23	124 47.1	118 44.9	37.4	34 41.8	52.8		189 40.3	35.7		188 40.4	12.4							
10 00	139 49.9	133 45.4	N 4 38.6	49 44.1	N 26 52.8		204 42.2	S 21 35.6		203 42.5	S 21 12.3		Canopus	264 13.3	S 52 40.8			
01	154 52.3	148 45.9	39.8	64 46.5	52.7		219 44.0	35.5		218 44.7	12.3		Capella	281 32.7	N 45 57.6			
02	169 54.8	163 46.4	41.0	79 48.8	52.7		234 45.9	35.5		233 46.9	12.3		Deneb	49 58.8	N 45 08.4			
03	184 57.3	178 46.8	.. 42.2	94 51.1	.. 52.6		249 47.8	.. 35.4		248 49.1	.. 12.2		Denebola	183 13.7	N 14 47.2			
04	199 59.7	193 47.3	43.4	109 53.5	52.6		264 49.7	35.3		263 51.2	12.2		Diphda	349 35.8	S 18 12.2			
05	215 02.2	208 47.8	44.5	124 55.8	52.5		279 51.6	35.2		278 53.6	12.1							
06	230 04.6	223 48.3	N 4 45.7	139 58.1	N 26 52.5		294 53.5	S 21 35.1		293 55.6	S 21 12.1		Dubhe	194 39.6	N 61 57.5			
07	245 07.1	238 48.8	46.9	155 00.4	52.4		309 55.3	35.0		308 57.7	12.0		Elnath	279 02.4	N 28 34.5			
08	260 09.6	253 49.3	48.1	170 02.7	52.4		324 57.2	34.9		323 59.9	12.0		Eltanin	91 04.9	N 51 29.5			
09	275 12.0	268 49.8	.. 49.3	185 05.1	.. 52.3		339 59.1	.. 34.8		339 02.1	.. 11.9		Enif	34 26.3	N 9 41.7			
10	290 14.5	283 50.3	50.5	200 07.4	52.2		355 01.0	34.7		354 04.3	11.9		Fomalhaut	16 07.9	S 29 49.9			
11	305 17.0	298 50.8	51.7	215 09.7	52.2		10 02.9	34.7		9 06.4	11.9							
12	320 19.4	313 51.3	N 4 52.8	230 12.0	N 26 52.1		25 04.7	S 21 34.6		24 08.6	S 21 11.8		Gacrux	172 44.5	S 56 53.5			
13	335 21.9	328 51.8	54.0	245 14.3	52.1		40 06.6	34.5		39 10.8	11.8		Gienah	176 32.8	S 17 19.6			
14	350 24.4	343 52.3	55.2	260 16.6	52.0		55 08.5	34.4		54 13.0	11.7		Hadar	149 43.8	S 60 10.9			
15	5 26.8	358 52.8	.. 56.4	275 19.0	.. 52.0		70 10.4	.. 34.3		69 15.1	.. 11.7		Hamal	328 45.5	N 23 16.7			
16	20 29.3	13 53.3	57.6	290 21.3	51.9		85 12.3	34.2		84 17.3	11.6		Kaus Aust.	84 36.5	S 34 24.1			
17	35 31.8	28 53.8	58.8	305 23.6	51.9		100 14.2	34.1		99 19.5	11.6							
18	50 34.2	43 54.3	N 4 59.9	320 25.9	N 26 51.8		115 16.0	S 21 34.0		114 21.7	S 21 11.5		Kochab	137 18.3	N 74 18.7			
19	65 36.7	58 54.8	5 01.1	335 28.2	51.8		130 17.9	33.9		129 23.8	11.5		Markab	14 18.0	N 14 59.7			
20	80 39.1	73 55.3	02.3	350 30.5	51.7		145 19.8	33.9		144 26.0	11.4		Menkar	314 56.4	N 3 56.1			
21	95 41.6	88 55.8	.. 03.5	5 32.8	.. 51.7		160 21.7	.. 33.8		159 28.2	.. 11.4		Menkent	148 54.1	S 36 10.6			
22	110 44.1	103 56.3	04.7	20 35.1	51.6		175 23.6	33.7		174 30.4	11.4		Miaplacidus	221 47.1	S 69 33.5			
23	125 46.5	118 56.8	05.8	35 37.4	51.5		190 25.4	33.6		189 32.5	11.3							
11 00	140 49.0	133 57.3	N 5 07.0	50 39.7	N 26 51.5		205 27.3	S 21 33.5		204 34.7	S 21 11.3		Mirfak	309 37.0	N 49 43.5			
01	155 51.5	148 57.8	08.2	65 42.0	51.4		220 29.2	33.4		219 36.9	11.2		Nunki	76 47.6	S 26 20.7			
02	170 53.9	163 58.4	09.4	80 44.3	51.4		235 31.1	33.3		234 39.0	11.2		Peacock	54 22.1	S 56 51.6			
03	185 56.4	178 58.9	.. 10.6	95 46.6	.. 51.3		250 33.0	.. 33.2		249 41.2	.. 11.1		Pollux	244 15.7	N 28 07.1			
04	200 58.9	193 59.4	11.7	110 48.9	51.3		265 34.9	33.1		264 43.4	11.1		Procyon	245 40.8	N 5 19.3			
05	216 01.3	208 59.9	12.9	125 51.2	51.2		280 36.8	33.1		279 45.6	11.0							
06	231 03.8	224 00.4	N 5 14.1	140 53.5	N 26 51.2		295 38.6	S 21 33.0		294 47.7	S 21 11.0		Rasalhague	96 43.3	N 12 35.2			
07	246 06.3	239 00.9	15.3	155 55.8	51.1		310 40.5	32.9		309 49.9	11.0		Regulus	208 25.3	N 12 09.4			
08	261 08.7	254 01.4	16.4	170 58.0	51.1		325 42.4	32.8		324 52.1	10.9		Rigel	281 49.9	S 8 15.0			
09	276 11.2	269 02.0	.. 17.6	186 00.3	.. 51.0		340 44.3	.. 32.7		339 54.3	.. 10.9		Rigel Kent.	140 45.6	S 60 40.2			
10	291 13.6	284 02.5	18.8	201 02.6	50.9		355 46.2	32.6		354 56.4	10.8		Sabik	102 58.1	S 15 40.6			
11	306 16.1	299 03.0	20.0	216 04.9	50.9		10 48.1	32.5		9 58.6	10.8							
12	321 18.6	314 03.5	N 5 21.2	231 07.2	N 26 50.8		25 49.9	S 21 32.4		25 00.8	S 21 10.7		Schedar	350 25.9	N 56 19.6			
13	336 21.0	329 04.0	22.3	246 09.5	50.8		40 51.8	32.3		40 03.0	10.7		Shaula	97 15.9	S 37 04.4			
14	351 23.5	344 04.6	23.5	261 11.8	50.7		55 53.7	32.3		55 05.1	10.6		Sirius	259 08.3	S 16 40.0			
15	6 26.0	359 05.1	.. 24.7	276 14.0	.. 50.7		70 55.6	.. 32.2		70 07.3	.. 10.6		Spica	159 12.8	S 10 57.5			
16	21 28.4	14 05.6	25.8	291 16.3	50.6		85 57.5	32.1		85 09.5	10.5		Suhail	223 21.1	S 43 16.6			
17	36 30.9	29 06.1	27.0	306 18.6	50.6		100 59.4	32.0		100 11.7	10.5							
18	51 33.4	44 06.7	N 5 28.2	321 20.9	N 26 50.5		116 01.2	S 21 31.9		115 13.9	S 21 10.5		Vega	81 06.0	N 38 44.7			
19	66 35.8	59 07.2	29.4	336 23.1	50.4		131 03.1	31.8		130 16.0	10.4		Zuben'ubi	137 49.2	S 15 52.8			
20	81 38.3	74 07.7	30.5	351 25.4	50.4		146 05.0	31.7		145 18.2	10.4							
21	96 40.8	88 09.3	.. 31.7	6 2														

G.M.T.	SUN				MOON				Lat.	Twilight		Sun-rise	Moonrise						
	G.H.A.		Dec.	v	Dec.		d	H.P.		Naut.	Civil		9	10	11	12			
	°	'			°	'											°	'	
d h	°	' <td>°</td> <td>'<td>°</td><td>'<td>°</td><td>'<td>°</td><td>h m</td><td>h m</td><td>h m</td><td>h m</td><td>h m</td><td>h m</td><td>h m</td></td></td></td>	°	' <td>°</td> <td>'<td>°</td><td>'<td>°</td><td>h m</td><td>h m</td><td>h m</td><td>h m</td><td>h m</td><td>h m</td><td>h m</td></td></td>	°	' <td>°</td> <td>'<td>°</td><td>h m</td><td>h m</td><td>h m</td><td>h m</td><td>h m</td><td>h m</td><td>h m</td></td>	°	' <td>°</td> <td>h m</td> <td>h m</td> <td>h m</td> <td>h m</td> <td>h m</td> <td>h m</td> <td>h m</td>	°	h m	h m	h m	h m	h m	h m	h m			
9 00	176	25.8	S14	48.8	266	10.3	9.6	S13	42.8	7.5	57.9	N 72	06 36	07 59	09 25	03 51	06 03	06 47	07 56
01	191	25.7		48.0	280	38.9	9.5	13	50.3	7.4	57.9	N 70	06 32	07 46	08 59	03 19	05 06	06 47	07 07
02	206	25.7		47.2	295	07.4	9.4	13	57.7	7.4	58.0	68	06 29	07 35	08 40	02 57	04 32	06 00	07 07
03	221	25.7	..	46.4	309	35.8	9.4	14	05.1	7.2	58.0	66	06 25	07 27	08 25	02 39	04 08	05 29	06 35
04	236	25.7		45.6	324	04.2	9.2	14	12.3	7.2	58.0	64	06 23	07 19	08 12	02 25	03 49	05 07	06 12
05	251	25.7		44.8	338	32.4	9.2	14	19.5	7.2	58.1	62	06 20	07 13	08 01	02 13	03 33	04 49	05 53
06	266	25.6	S14	44.0	353	00.6	9.1	S14	26.7	7.0	58.1	60	06 18	07 07	07 52	02 03	03 21	04 34	05 38
07	281	25.6		43.2	7 28.7	9.1		14	33.7	7.0	58.2	N 58	06 16	07 02	07 44	01 54	03 09	04 21	05 25
08	296	25.6		42.4	21 56.8	8.9		14	40.7	6.9	58.2	56	06 14	06 57	07 37	01 46	03 00	04 10	05 13
09	311	25.6	..	41.6	36 24.7	8.9		14	47.6	6.8	58.2	54	06 12	06 53	07 31	01 39	02 51	04 01	05 04
10	326	25.6		40.8	50 52.6	8.8		14	54.4	6.7	58.3	52	06 10	06 49	07 25	01 33	02 44	03 52	04 55
11	341	25.5		40.0	65 20.4	8.7		15	01.1	6.7	58.3	50	06 08	06 46	07 20	01 28	02 37	03 44	04 47
12	356	25.5	S14	39.2	79 48.1	8.6		S15	07.8	6.6	58.3	45	06 04	06 38	07 09	01 16	02 22	03 28	04 30
13	11	25.5		38.4	94 15.7	8.6		15	14.4	6.5	58.4	N 40	05 59	06 31	06 59	01 06	02 10	03 14	04 16
14	26	25.5		37.6	108 43.3	8.4		15	20.9	6.4	58.4	35	05 55	06 25	06 51	00 58	02 00	03 03	04 04
15	41	25.5	..	36.8	123 10.7	8.4		15	27.3	6.3	58.4	30	05 51	06 19	06 44	00 51	01 51	02 53	03 54
16	56	25.5		36.0	137 38.1	8.4		15	33.6	6.3	58.5	20	05 43	06 09	06 32	00 38	01 36	02 36	03 37
17	71	25.5		35.2	152 05.5	8.2		15	39.9	6.2	58.5	N 10	05 35	06 00	06 21	00 27	01 23	02 21	03 22
18	86	25.4	S14	34.4	166 32.7	8.2		S15	46.1	6.0	58.5	0	05 25	05 49	06 11	00 16	01 10	02 07	03 07
19	101	25.4		33.6	180 59.9	8.0		15	52.1	6.0	58.6	S 10	05 13	05 39	06 00	00 06	00 58	01 53	02 53
20	116	25.4		32.8	195 26.9	8.0		15	58.1	5.9	58.6	20	04 59	05 26	05 49	24 45	00 45	01 39	02 37
21	131	25.4	..	32.0	209 53.9	7.9		16	04.0	5.8	58.6	30	04 41	05 11	05 36	24 29	00 29	01 22	02 20
22	146	25.4		31.2	224 20.8	7.9		16	09.8	5.8	58.7	35	04 29	05 02	05 29	24 21	00 21	01 12	02 10
23	161	25.4		30.3	238 47.7	7.7		16	15.6	5.6	58.7	40	04 15	04 51	05 20	24 11	00 11	01 01	01 59
10 00	176	25.4	S14	29.5	253 14.4	7.7		S16	21.2	5.5	58.8	45	03 58	04 37	05 10	24 00	00 00	00 48	01 45
01	191	25.3		28.7	267 41.1	7.6		16	26.7	5.4	58.8	S 50	03 35	04 21	04 57	23 46	24 32	00 32	01 28
02	206	25.3		27.9	282 07.7	7.6		16	32.1	5.4	58.8	52	03 23	04 13	04 51	23 39	24 25	00 25	01 20
03	221	25.3	..	27.1	296 34.3	7.4		16	37.5	5.2	58.9	54	03 10	04 04	04 45	23 32	24 16	00 16	01 12
04	236	25.3		26.3	311 00.7	7.4		16	42.7	5.2	58.9	56	02 54	03 54	04 38	23 24	24 07	00 07	01 02
05	251	25.3		25.5	325 27.1	7.3		16	47.9	5.0	58.9	58	02 35	03 42	04 30	23 15	23 57	24 51	00 51
06	266	25.3	S14	24.7	339 53.4	7.2		S16	52.9	5.0	59.0	S 60	02 09	03 28	04 21	23 05	23 45	24 38	00 38
07	281	25.3		23.9	354 19.6	7.1		16	57.9	4.8	59.0								
08	296	25.3		23.1	8 45.7	7.1		17	02.7	4.8	59.0	Lat.	Sun-set	Twilight		Moonset			
09	311	25.3	..	22.3	23 11.8	7.0		17	07.5	4.6	59.1	Civil	Naut.	9	10	11	12		
10	326	25.3		21.4	37 37.8	6.9		17	12.1	4.6	59.1	°	h m	h m	h m	h m	h m	h m	h m
11	341	25.2		20.6	52 03.7	6.8		17	16.7	4.4	59.1	N 72	15 05	16 32	17 54	08 54	08 35	09 53	10 49
12	356	25.2	S14	19.8	66 29.5	6.8		S17	21.1	4.3	59.2	N 70	15 31	16 44	17 58	09 26	09 32	09 53	10 49
13	11	25.2		19.0	80 55.3	6.7		17	25.4	4.3	59.2	68	15 50	16 54	18 02	09 49	10 07	10 39	11 39
14	26	25.2		18.2	95 21.0	6.6		17	29.7	4.1	59.2	66	16 05	17 03	18 04	10 08	10 32	11 10	12 10
15	41	25.2	..	17.4	109 46.6	6.6		17	33.8	4.0	59.3	64	16 18	17 10	18 07	10 23	10 51	11 33	12 33
16	56	25.2		16.6	124 12.2	6.4		17	37.8	3.9	59.3	62	16 28	17 17	18 10	10 35	11 07	11 51	12 52
17	71	25.2		15.7	138 37.6	6.4		17	41.7	3.8	59.3	60	16 37	17 23	18 12	10 46	11 20	12 06	13 07
18	86	25.2	S14	14.9	153 03.0	6.4		S17	45.5	3.6	59.4	N 58	16 45	17 27	18 14	10 56	11 32	12 19	13 20
19	101	25.2		14.1	167 28.4	6.2		17	49.1	3.6	59.4	56	16 52	17 32	18 16	11 04	11 42	12 30	13 31
20	116	25.2		13.3	181 53.6	6.2		17	52.7	3.5	59.4	54	16 59	17 36	18 18	11 11	11 51	12 40	13 41
21	131	25.2	..	12.5	196 18.8	6.2		17	56.2	3.3	59.5	52	17 04	17 40	18 20	11 18	11 59	12 49	13 50
22	146	25.2		11.7	210 44.0	6.0		17	59.3	3.2	59.5	50	17 09	17 43	18 21	11 24	12 06	12 57	13 58
23	161	25.2		10.8	225 09.0	6.0		18	02.7	3.1	59.5	45	17 20	17 51	18 26	11 36	12 21	13 13	14 14
11 00	176	25.2	S14	10.0	239 34.0	5.9		S18	05.8	3.0	59.6	N 40	17 30	17 58	18 30	11 47	12 33	13 27	14 28
01	191	25.2		09.2	253 58.9	5.9		18	08.8	2.9	59.6	35	17 38	18 04	18 34	11 56	12 44	13 39	14 40
02	206	25.2		08.4	268 23.8	5.8		18	11.7	2.7	59.6	30	17 45	18 09	18 38	12 04	12 53	13 49	14 49
03	221	25.2	..	07.6	282 48.6	5.7		18	14.4	2.6	59.7	20	17 57	18 19	18 46	12 18	13 10	14 06	15 07
04	236	25.1		06.8	297 13.3	5.7		18	17.0	2.5	59.7	N 10	18 08	18 29	18 54	12 30	13 24	14 21	15 22
05	251	25.1		05.9	311 38.0	5.6		18	19.5	2.4	59.7	0	18 18	18 39	19 04	12 42	13 37	14 36	15 36
06	266	25.1	S14	05.1	326 02.6	5.6		S18	21.9	2.3	59.8	S 10	18 28	18 50	19 15	12 53	13 50	14 50	15 50
07	281	25.1		04.3	340 27.2	5.4		18	24.2	2.1	59.8	20	18 39	19 02	19 29	13 05	14 05	15 05	16 05
08	296	25.1		03.5	354 51.6	5.5		18	26.3	2.1	59.8	30	18 52	19 17	19 47	13 20	14 21	15 23	16 23
09	311	25.1	..	02.6	9 16.1	5.4		18	28.4	1.8	59.9	35	18 59	19 26	19 59	13 27	14 30	15 32	16 32
10	326	25.1		01.8	23 40.5	5.3		18	30.2	1.8	59.9	40	19 08	19 37	20 12	13 36	14 41	15 44	16 44
11	341	25.1		01.0	38 04.8	5.2		18	32.0	1.7	59.9	45	19 18	19 50	20 29	13 47	14 53	15 57	16 57
12	356	25.1	S14	00.2	52 29.0	5.2		S18	33.7	1.5	60.0	S 50	19 30	20 06	20 52	14 01	15 09	16 14	17 13
13	11	25.1	13	59.4	66 53.2	5.2		18	35.2	1.4	60.0	52	19 36	20 14	21 03	14 07	15 16	16 22	17 21
14	26	25.1		58.5	81 17.4	5.1		18	36.6	1.2	60.0	54	19 42	20 23	21 16	14 13	15 24	16 30	17 29
15	41	25.1	..	57.7	95 41.5	5.1		18	3										

G.M.T.	ARIES			VENUS -4.2			MARS -0.2			JUPITER -1.5			SATURN +0.8			STARS		
	G.H.A.	G.H.A.	Dec.	G.H.A.	G.H.A.	Dec.	G.H.A.	G.H.A.	Dec.	G.H.A.	G.H.A.	Dec.	G.H.A.	G.H.A.	Dec.	Name	S.H.A.	Dec.
d h	o ' "	o ' "	o ' "	o ' "	o ' "	o ' "	o ' "	o ' "	o ' "	o ' "	o ' "	o ' "	o ' "	o ' "	o ' "	o ' "	o ' "	o ' "
12 00	141 48.1	134 09.9	N 5 35.2	51 34.5	N 26 50.2		206 12.6	S 21 31.4		205 26.9	S 21 10.2		Acamar	315 48.4	S 40 28.0			
01	156 50.6	149 10.4	36.4	66 36.7	50.1		221 14.4	31.3		220 29.1	10.1		Achernar	335 56.5	S 57 26.4			
02	171 53.1	164 10.9	37.6	81 39.0	50.1		236 16.3	31.2		235 31.3	10.1		Acrux	173 52.9	S 62 52.8			
03	186 55.5	179 11.5	.. 38.7	96 41.3	.. 50.0		251 18.2	.. 31.1		250 33.4	.. 10.0		Adhara	255 43.3	S 28 55.4			
04	201 58.0	194 12.0	39.9	111 43.5	50.0		266 20.1	31.0		265 35.6	10.0		Aldebaran	291 34.7	N 16 25.8			
05	217 00.5	209 12.5	41.1	126 45.8	49.9		281 22.0	30.9		280 37.8	10.0							
06	232 02.9	224 13.1	N 5 42.2	141 48.1	N 26 49.8		296 23.9	S 21 30.8		295 40.0	S 21 09.9		Alioth	166 55.1	N 56 10.0			
07	247 05.4	239 13.6	43.4	156 50.3	49.8		311 25.8	30.7		310 42.1	09.9		Alkaid	153 29.9	N 49 30.2			
08	262 07.9	254 14.2	44.6	171 52.6	49.7		326 27.6	30.7		325 44.3	09.8		Al Na'ir	28 33.8	S 47 09.1			
09	277 10.3	269 14.7	.. 45.8	186 54.8	.. 49.7		341 29.5	.. 30.6		340 46.5	.. 09.8		Alnilam	276 26.3	S 1 13.8			
10	292 12.8	284 15.3	46.9	201 57.1	49.6		356 31.4	30.5		355 48.7	09.7		Alphard	218 34.6	S 8 29.5			
11	307 15.2	299 15.8	48.1	216 59.3	49.6		11 33.3	30.4		10 50.8	09.7							
12	322 17.7	314 16.3	N 5 49.3	232 01.6	N 26 49.5		26 35.2	S 21 30.3		25 53.0	S 21 09.6		Alphecca	126 44.5	N 26 50.6			
13	337 20.2	329 16.9	50.4	247 03.8	49.5		41 37.1	30.2		40 55.2	09.6		Alpheratz	358 24.7	N 28 52.5			
14	352 22.6	344 17.4	51.6	262 06.1	49.4		56 39.0	30.1		55 57.4	09.5		Altair	62 47.1	N 8 45.8			
15	7 25.1	359 18.0	.. 52.7	277 08.3	.. 49.4		71 40.9	.. 30.0		70 59.6	.. 09.5		Ankaa	353 55.0	S 42 31.3			
16	22 27.6	14 18.5	53.9	292 10.6	49.3		86 42.7	29.9		86 01.7	09.5		Antares	113 14.9	S 26 20.7			
17	37 30.0	29 19.1	55.1	307 12.8	49.2		101 44.6	29.8		101 03.9	09.4							
18	52 32.5	44 19.6	N 5 56.2	322 15.0	N 26 49.2		116 46.5	S 21 29.8		116 06.1	S 21 09.4		Arcturus	146 31.7	N 19 22.9			
19	67 35.0	59 20.2	57.4	337 17.3	49.1		131 48.4	29.7		131 08.3	09.3		Atria	108 52.4	S 68 57.1			
20	82 37.4	74 20.8	58.6	352 19.5	49.1		146 50.3	29.6		146 10.4	09.3		Avior	234 33.5	S 59 23.2			
21	97 39.9	89 21.3	5 59.7	7 21.8	.. 49.0		161 52.2	.. 29.5		161 12.6	.. 09.2		Bellatrix	279 14.3	N 6 18.7			
22	112 42.4	104 21.9	6 00.9	22 24.0	49.0		176 54.1	29.4		176 14.8	09.2		Betelgeuse	271 43.9	N 7 23.8			
23	127 44.8	119 22.4	02.1	37 26.2	48.9		191 55.9	29.3		191 17.0	09.1							
13 00	142 47.3	134 23.0	N 6 03.2	52 28.5	N 26 48.9		206 57.8	S 21 29.2		206 19.2	S 21 09.1		Canopus	264 13.3	S 52 40.8			
01	157 49.7	149 23.5	04.4	67 30.7	48.8		221 59.7	29.1		221 21.3	09.0		Capella	281 32.7	N 45 57.6			
02	172 52.2	164 24.1	05.5	82 32.9	48.7		237 01.6	29.0		236 23.5	09.0		Deneb	49 58.8	N 45 08.4			
03	187 54.7	179 24.7	.. 06.7	97 35.2	.. 48.7		252 03.5	.. 28.9		251 25.7	.. 09.0		Denebola	183 13.7	N 14 47.2			
04	202 57.1	194 25.2	07.9	112 37.4	48.6		267 05.4	28.9		266 27.9	08.9		Diphda	349 35.8	S 18 12.2			
05	217 59.6	209 25.8	09.0	127 39.6	48.6		282 07.3	28.8		281 30.0	08.9							
06	233 02.1	224 26.4	N 6 10.2	142 41.9	N 26 48.5		297 09.2	S 21 28.7		296 32.2	S 21 08.8		Dubhe	194 39.6	N 61 57.5			
07	248 04.5	239 26.9	11.3	157 44.1	48.5		312 11.1	28.6		311 34.4	08.8		Elnath	279 02.4	N 28 34.5			
08	263 07.0	254 27.5	12.5	172 46.3	48.4		327 12.9	28.5		326 36.6	08.7		Eltanin	91 04.8	N 51 29.4			
09	278 09.5	269 28.1	.. 13.6	187 48.5	.. 48.4		342 14.8	.. 28.4		341 38.8	.. 08.7		Enif	34 26.3	N 9 41.7			
10	293 11.9	284 28.6	14.8	202 50.7	48.3		357 16.7	28.3		356 40.9	08.6		Fomalhaut	16 07.9	S 29 49.9			
11	308 14.4	299 29.2	16.0	217 53.0	48.2		12 18.6	28.2		11 43.1	08.6							
12	323 16.9	314 29.8	N 6 17.1	232 55.2	N 26 48.2		27 20.5	S 21 28.1		26 45.3	S 21 08.6		Gacrux	172 44.5	S 56 53.5			
13	338 19.3	329 30.4	18.3	247 57.4	48.1		42 22.4	28.0		41 47.5	08.5		Gienah	176 32.8	S 17 19.6			
14	353 21.8	344 30.9	19.4	262 59.6	48.1		57 24.3	28.0		56 49.6	08.5		Hadar	149 43.8	S 60 10.9			
15	8 24.2	359 31.5	.. 20.6	278 01.8	.. 48.0		72 26.2	.. 27.9		71 51.8	.. 08.4		Hamal	328 45.5	N 23 16.7			
16	23 26.7	14 32.1	21.7	293 04.0	48.0		87 28.1	27.8		86 54.0	08.4		Kaus Aust.	84 36.5	S 34 24.1			
17	38 29.2	29 32.7	22.9	308 06.3	47.9		102 29.9	27.7		101 56.2	08.3							
18	53 31.6	44 33.2	N 6 24.0	323 08.5	N 26 47.9		117 31.8	S 21 27.6		116 58.4	S 21 08.3		Kochab	137 18.3	N 74 18.7			
19	68 34.1	59 33.8	25.2	338 10.7	47.8		132 33.7	27.5		132 00.5	08.2		Markab	14 18.0	N 14 59.7			
20	83 36.6	74 34.4	26.4	353 12.9	47.7		147 35.6	27.4		147 02.7	08.2		Menkar	314 56.5	N 3 56.1			
21	98 39.0	89 35.0	.. 27.5	8 15.1	.. 47.7		162 37.5	.. 27.3		162 04.9	.. 08.2		Menkent	148 54.1	S 36 10.6			
22	113 41.5	104 35.6	28.7	23 17.3	47.6		177 39.4	27.2		177 07.1	08.1		Miaplacidus	221 47.1	S 69 33.5			
23	128 44.0	119 36.2	29.8	38 19.5	47.6		192 41.3	27.2		192 09.3	08.1							
14 00	143 46.4	134 36.7	N 6 31.0	53 21.7	N 26 47.5		207 43.2	S 21 27.1		207 11.4	S 21 08.0		Mirfak	309 37.0	N 49 43.5			
01	158 48.9	149 37.3	32.1	68 23.9	47.5		222 45.1	27.0		222 13.6	08.0		Nunki	76 47.6	S 26 20.7			
02	173 51.4	164 37.9	33.3	83 26.1	47.4		237 47.0	26.9		237 15.8	07.9		Peacock	54 22.1	S 56 51.6			
03	188 53.8	179 38.5	.. 34.4	98 28.3	.. 47.3		252 48.8	.. 26.8		252 18.0	.. 07.9		Pollux	244 15.7	N 28 07.1			
04	203 56.3	194 39.1	35.6	113 30.5	47.3		267 50.7	26.7		267 20.2	07.8		Procyon	245 40.8	N 5 19.3			
05	218 58.7	209 39.7	36.7	128 32.7	47.2		282 52.6	26.6		282 22.3	07.8							
06	234 01.2	224 40.3	N 6 37.9	143 34.9	N 26 47.2		297 54.5	S 21 26.5		297 24.5	S 21 07.7		Rasalhague	96 43.3	N 12 35.2			
07	249 03.7	239 40.9	39.0	158 37.1	47.1		312 56.4	26.4		312 26.7	07.7		Regulus	208 25.2	N 12 09.3			
08	264 06.1	254 41.5	40.2	173 39.3	47.1		327 58.3	26.3		327 28.9	07.7		Rigel	281 49.9	S 8 15.0			
09	279 08.6	269 42.1	.. 41.3	188 41.5	.. 47.0		343 00.2	.. 26.3		342 31.1	.. 07.6		Rigel Kent.	140 45.6	S 60 40.2			
10	294 11.1	284 42.7	42.5	203 43.7	47.0		358 02.1	26.2		357 33.2	07.6		Sabik	102 58.1	S 15 40.6			
11	309 13.5	299 43.3	43.6	218 45.9	46.9		13 04.0	26.1		12 35.4	07.5							
12	324 16.0	314 43.9	N 6 44.8	233 48.0	N 26 46.8		28 05.9	S 21 26.0		27 37.6	S 21 07.5		Schedar	350 26.0	N 56 19.5			
13	339 18.5	329 44.5	45.9	248 50.2	46.8		43 07.8	25.9		42 39.8	07.4		Shaula	97 15.8	S 37 04.4			
14	354 20.9	344 45.1	47.0	263 52.4	46.7		58 09.7	.. 25.8		57 42.0	07.4		Sirius	259 08.3	S 16 40.0			
15	9 23.4	359 45.7	.. 48.2	278 54.6	.. 46.7		73 11.6	.. 25.7		72 44.1	.. 07.3		Spica	159 12.8	S 10 57.5			
16	24 25.8	14 46.3	49.3	293 56.8	46.6		88 13.4	25.6		87 46.3	07.3		Suhail	223 21.1	S 43 16.6			
17	39 28.3	29 46.9	50.5	308 59.0	46.6		103 15.3	25.5		102 48.5	07.3							
18	54 30.8	44 47.5	N 6 51.6	324 01.1	N 26 46.5		118 17.2	S 21 25.4		117 50.7	S 21 07.2		Vega	81 06.0	N 38 44.7			
19	69 33.2	59 48.1	52.8	339 03.3	46.4		133 19.1	25.4		132 52.9	07.2		Zuben'ubi	137 49.2	S 15 52.8			
20	84 35.7	74 48.7	53.9	354 05.5	46.4		148 21.0	25.3		147 55.0	07.1							
21	99 38.2	89 49.3																

G.M.T.	ARIES		VENUS -4.2		MARS -0.1		JUPITER -1.5		SATURN +0.8		STARS		
	G.H.A.		G.H.A.	Dec.	G.H.A.	Dec.	G.H.A.	Dec.	G.H.A.	Dec.	Name	S.H.A.	Dec.
d h	° ' "		° ' "	° ' "	° ' "	° ' "	° ' "	° ' "	° ' "	° ' "		° ' "	° ' "
15													
00	144 45.6	134 51.1 N	6 58.5	54 14.2 N26 46.2	208 28.6 S21 24.9	208 03.8 S21 06.9	208 03.8 S21 06.9	208 03.8 S21 06.9	208 03.8 S21 06.9	208 03.8 S21 06.9	Acamar	315 48.4	S 40 28.0
01	159 48.0	149 51.8	6 59.6	69 16.4	46.1	223 30.5	24.8	223 06.0	06.9	223 06.0	Achernar	335 56.5	S 57 26.4
02	174 50.5	164 52.4	7 00.8	84 18.5	46.1	238 32.4	24.7	238 08.1	06.8	238 08.1	Acrux	173 52.9	S 62 52.8
03	189 53.0	179 53.0	7 01.9	99 20.7	46.0	253 34.3	24.6	253 10.3	06.8	253 10.3	Adhara	255 43.3	S 28 55.4
04	204 55.4	194 53.6	03.0	114 22.9	45.9	268 36.2	24.5	268 12.5	06.8	268 12.5	Aldebaran	291 34.7	N 16 25.8
05	219 57.9	209 54.2	04.2	129 25.0	45.9	283 38.1	24.5	283 14.7	06.7	283 14.7			
06	235 00.3	224 54.8 N	7 05.3	144 27.2 N26 45.8	298 40.0 S21 24.4	298 16.9 S21 06.7	298 16.9 S21 06.7	298 16.9 S21 06.7	298 16.9 S21 06.7	298 16.9 S21 06.7	Alioth	166 55.0	N 56 10.0
07	250 02.8	239 55.5	06.4	159 29.4	45.8	313 41.8	24.3	313 19.0	06.6	313 19.0	Alkaid	153 29.8	N 49 30.2
08	265 05.3	254 56.1	07.6	174 31.5	45.7	328 43.7	24.2	328 21.2	06.6	328 21.2	Al Na'ir	28 33.8	S 47 09.1
09	280 07.7	269 56.7	08.7	189 33.7	45.7	343 45.6	24.1	343 23.4	06.5	343 23.4	Alnilam	276 26.3	S 1 13.8
10	295 10.2	284 57.3	09.9	204 35.8	45.6	358 47.5	24.0	358 25.6	06.5	358 25.6	Alphard	218 34.6	S 8 29.5
11	310 12.7	299 58.0	11.0	219 38.0	45.5	373 49.4	23.9	373 27.8	06.4	373 27.8			
12	325 15.1	314 58.6 N	7 12.1	234 40.2 N26 45.5	28 51.3 S21 23.8	28 30.0 S21 06.4	28 30.0 S21 06.4	28 30.0 S21 06.4	28 30.0 S21 06.4	28 30.0 S21 06.4	Alphecca	126 44.5	N 26 50.6
13	340 17.6	329 59.2	13.3	249 42.3	45.4	43 53.2	23.7	43 32.1	06.3	43 32.1	Alpheratz	358 24.7	N 28 52.5
14	355 20.1	344 59.8	14.4	264 44.5	45.4	58 55.1	23.6	58 34.3	06.3	58 34.3	Altair	62 47.1	N 8 45.8
15	10 22.5	0 00.5	15.5	279 46.6	45.3	73 57.0	23.5	73 36.5	06.3	73 36.5	Ankaa	353 55.0	S 42 31.3
16	25 25.0	15 01.1	16.7	294 48.8	45.3	88 58.9	23.5	88 38.7	06.2	88 38.7	Antares	113 14.9	S 26 20.7
17	40 27.5	30 01.7	17.8	309 50.9	45.2	104 00.8	23.4	103 40.9	06.2	103 40.9			
18	55 29.9	45 02.4 N	7 18.9	324 53.1 N26 45.1	119 02.7 S21 23.3	118 43.0 S21 06.1	118 43.0 S21 06.1	118 43.0 S21 06.1	118 43.0 S21 06.1	118 43.0 S21 06.1	Arcturus	146 31.7	N 19 22.9
19	70 32.4	60 03.0	20.1	339 55.2	45.1	134 04.6	23.2	133 45.2	06.1	133 45.2	Atria	108 52.4	S 68 57.1
20	85 34.8	75 03.6	21.2	354 57.4	45.0	149 06.5	23.1	148 47.4	06.0	148 47.4	Avior	234 33.5	S 59 30.2
21	100 37.3	90 04.3	22.3	9 59.5	45.0	164 08.4	23.0	163 49.6	06.0	163 49.6	Bellatrix	279 14.3	N 6 18.7
22	115 39.8	105 04.9	23.4	25 01.7	44.9	179 10.3	22.9	178 51.8	05.9	178 51.8	Betelgeuse	271 43.9	N 7 23.8
23	130 42.2	120 05.6	24.6	40 03.8	44.9	194 12.2	22.8	193 54.0	05.9	193 54.0			
16													
00	145 44.7	135 06.2 N	7 25.7	55 05.9 N26 44.8	209 14.1 S21 22.7	208 56.1 S21 05.9	208 56.1 S21 05.9	208 56.1 S21 05.9	208 56.1 S21 05.9	208 56.1 S21 05.9	Canopus	264 13.3	S 52 40.8
01	160 47.2	150 06.8	26.8	70 08.1	44.7	224 16.0	22.6	223 58.3	05.8	223 58.3	Capella	281 32.7	N 45 57.6
02	175 49.6	165 07.5	28.0	85 10.2	44.7	239 17.8	22.5	239 00.5	05.8	239 00.5	Deneb	49 58.8	N 45 08.4
03	190 52.1	180 08.1	29.1	100 12.4	44.6	254 19.7	22.5	254 02.7	05.7	254 02.7	Denebola	183 13.7	N 14 47.2
04	205 54.6	195 08.8	30.2	115 14.5	44.6	269 21.6	22.4	269 04.9	05.7	269 04.9	Diphda	349 35.8	S 18 12.2
05	220 57.0	210 09.4	31.3	130 16.6	44.5	284 23.5	22.3	284 07.1	05.6	284 07.1			
06	235 59.5	225 10.1 N	7 32.5	145 18.8 N26 44.5	299 25.4 S21 22.2	299 09.2 S21 05.6	299 09.2 S21 05.6	299 09.2 S21 05.6	299 09.2 S21 05.6	299 09.2 S21 05.6	Dubhe	194 39.6	N 61 57.5
07	251 01.9	240 10.7	33.6	160 20.9	44.4	314 27.3	22.1	314 11.4	05.5	314 11.4	Elnath	279 02.4	N 28 34.5
08	266 04.4	255 11.4	34.7	175 23.0	44.3	329 29.2	22.0	329 13.6	05.5	329 13.6	Eltanin	91 04.8	N 51 29.4
09	281 06.9	270 12.0	35.9	190 25.2	44.3	344 31.1	21.9	344 15.8	05.4	344 15.8	Enif	34 26.2	N 9 41.7
10	296 09.3	285 12.7	37.0	205 27.3	44.2	359 33.0	21.8	359 18.0	05.4	359 18.0	Fomalhaut	16 07.9	S 29 49.9
11	311 11.8	300 13.3	38.1	220 29.4	44.2	374 34.9	21.7	374 20.2	05.4	374 20.2			
12	326 14.3	315 14.0 N	7 39.2	235 31.5 N26 44.1	29 36.8 S21 21.6	29 22.3 S21 05.3	29 22.3 S21 05.3	29 22.3 S21 05.3	29 22.3 S21 05.3	29 22.3 S21 05.3	Gacrux	172 44.5	S 56 53.6
13	341 16.7	330 14.6	40.3	250 33.7	44.1	44 38.7	21.5	44 24.5	05.3	44 24.5	Gienah	176 32.7	S 17 19.6
14	356 19.2	345 15.3	41.5	265 35.8	44.0	59 40.6	21.5	59 26.7	05.2	59 26.7	Hadar	149 43.7	S 60 10.9
15	11 21.7	0 16.0	42.6	280 37.9	43.9	74 42.5	21.4	74 28.9	05.2	74 28.9	Hamal	328 45.5	N 23 16.7
16	26 24.1	15 16.6	43.7	295 40.0	43.9	89 44.4	21.3	89 31.1	05.1	89 31.1	Kaus Aust.	84 36.5	S 34 24.1
17	41 26.6	30 17.3	44.8	310 42.2	43.8	104 46.3	21.2	104 33.3	05.1	104 33.3			
18	56 29.1	45 18.0 N	7 46.0	325 44.3 N26 43.8	119 48.2 S21 21.1	119 35.5 S21 05.0	119 35.5 S21 05.0	119 35.5 S21 05.0	119 35.5 S21 05.0	119 35.5 S21 05.0	Kochab	137 18.2	N 74 18.7
19	71 31.5	60 18.6	47.1	340 46.4	43.7	134 50.1	21.0	134 37.6	05.0	134 37.6	Markab	14 18.0	N 14 59.7
20	86 34.0	75 19.3	48.2	355 48.5	43.7	149 52.0	20.9	149 39.8	05.0	149 39.8	Menkar	314 56.5	N 3 56.1
21	101 36.4	90 19.9	49.3	10 50.6	43.6	164 53.9	20.8	164 42.0	04.9	164 42.0	Menkent	148 54.1	S 36 10.6
22	116 38.9	105 20.6	50.4	25 52.7	43.5	179 55.8	20.7	179 44.2	04.9	179 44.2	Miaplacidus	221 47.1	S 69 33.5
23	131 41.4	120 21.3	51.6	40 54.9	43.5	194 57.7	20.6	194 46.4	04.8	194 46.4			
17													
00	146 43.8	135 22.0 N	7 52.7	55 57.0 N26 43.4	209 59.6 S21 20.6	209 48.6 S21 04.8	209 48.6 S21 04.8	209 48.6 S21 04.8	209 48.6 S21 04.8	209 48.6 S21 04.8	Mirfak	309 37.0	N 49 43.5
01	161 46.3	150 22.6	53.8	70 59.1	43.4	225 01.5	20.5	224 50.7	04.7	224 50.7	Nunki	76 47.6	S 26 20.7
02	176 48.8	165 23.3	54.9	86 01.2	43.3	240 03.4	20.4	239 52.9	04.7	239 52.9	Peacock	54 22.1	S 56 51.6
03	191 51.2	180 24.0	56.0	101 03.3	43.2	255 05.3	20.3	254 55.1	04.6	254 55.1	Pollux	244 15.7	N 28 07.2
04	206 53.7	195 24.7	57.1	116 05.4	43.2	270 07.2	20.2	269 57.3	04.6	269 57.3	Procyon	245 40.8	N 5 19.3
05	221 56.2	210 25.3	58.3	131 07.5	43.1	285 09.1	20.1	284 59.5	04.6	284 59.5			
06	236 58.6	225 26.0 N	7 59.4	146 09.6 N26 43.1	300 11.0 S21 20.0	300 01.7 S21 04.5	300 01.7 S21 04.5	300 01.7 S21 04.5	300 01.7 S21 04.5	300 01.7 S21 04.5	Rasalhague	96 43.3	N 12 35.2
07	252 01.1	240 26.7	8 00.5	161 11.7	43.0	315 12.9	19.9	315 03.9	04.5	315 03.9	Regulus	208 25.2	N 12 09.3
08	267 03.5	255 27.4	01.6	176 13.8	43.0	330 14.8	19.8	330 06.0	04.4	330 06.0	Rigel	281 49.9	S 8 15.0
09	282 06.0	270 28.1	02.7	191 15.9	42.9	345 16.7	19.7	345 08.2	04.4	345 08.2	Rigel Kent.	140 45.5	S 60 40.2
10	297 08.5	285 28.7	03.8	206 18.0	42.8	0 18.6	19.6	0 10.4	04.3	0 10.4	Sabik	102 58.0	S 15 40.6
11	312 10.9	300 29.4	04.9	221 20.1	42.8	15 20.5	19.5	15 12.6	04.3	15 12.6			
12	327 13.4	315 30.1 N	8 06.0	236 22.2 N26 42.7	30 22.4 S21 19.5	30 14.8 S21 04.2	30 14.8 S21 04.2	30 14.8 S21 04.2	30 14.8 S21 04.2	30 14.8 S21 04.2	Schedar	350 26.0	N 56 19.5
13	342 15.9	330 30.8	07.2	251 24.3	42.7	45 24.3	19.4	45 17.0	04.2	45 17.0	Shaula	97 15.8	S 37 04.4
14	357 18.3	345 31.5	08.3	266 26.4	42.6	60 26.2	19.3	60 19.2	04.2	60 19.2	Sirius	259 08.4	S 16 40.0
15	12 20.8	0 32.2	09.4	281 28.5	42.5	75 28.1	19.2	75 21.3	04.1	75 21.3	Spica	159 12.8	S 10 57.5
16	27 23.3	15 32.9	10.5	296 30.6	42.6	90 30.0	19.1	90 23.5	04.1	90 23.5	Suhail	223 21.1	S 43 16.7
17	42 25.7	30 33.6	11.6	311 32.7	42.4	105 31.9	19.0	105 25.7	04.0	105 25.7			
18	57 28.2	45 34.3 N	8 12.7	326 34.8 N26 42.4	120 33.8 S21 18.9	120 27.9 S21 04.0	120 27.9 S21 04.0	120 27.9 S21 04.0	120 27.9 S21 04.0	120 27.9 S21 04.0	Vega	81 06.0	N 38 44.7
19	72 30.7	60 34.9	13.8	341 36.8	42.3	135 35.7	18.8	135 30.1	03.9	135 30.1	Zuben'ubi	137 49.2	S 15 52.8
20	87 33.1	75 35.6	14.9	356 38.9	42.3	150 37.6	18.7	150 32.3	03.9	150 32.3			
21	102 35.6	90 36.3	16.0	11 41.0	42.2	165 39.5	18.6	165 34.5	03.8	165 34.5			
22	11												

G.M.T.	SUN		MOON					Lat.	Twilight		Sun-rise	Moonrise										
	G.H.A.	Dec.	G.H.A.	v	Dec.	d	H.P.		Naut.	Civil		15	16	17	18							
d	h	°	'	°	'	°	'	°	'	h	m	h	m	h	m	h	m	h	m			
WEDNESDAY	15	00	176	26.2	S 12	49.7	181	32.6	5.6	S 13	06.9	8.9	61.2	N 72	06 11	07 31	08 49	08 57	08 49	08 42	08 35	
	01	191	26.2		48.8	195	57.2	5.7	12	58.0	9.0	61.2	N 70	06 10	07 21	08 30	08 36	08 37	08 37	08 37		
	02	206	26.3		48.0	210	21.9	5.8	12	49.0	9.0	61.2	68	06 09	07 14	08 15	08 20	08 28	08 34	08 39		
	03	221	26.3	..	47.1	224	46.7	5.7	12	40.0	9.2	61.1	66	06 07	07 07	08 03	08 07	08 20	08 31	08 40		
	04	236	26.3		46.3	239	11.4	5.9	12	30.8	9.2	61.1	64	06 06	07 02	07 52	07 57	08 14	08 28	08 41		
	05	251	26.4		45.4	253	36.3	5.9	12	21.6	9.3	61.1	62	06 05	06 57	07 44	07 47	08 08	08 26	08 42		
	06	266	26.4	S 12	44.5	A Total Eclipse																
	07	281	26.4		43.7	of the Sun occurs on																
	08	296	26.4		42.8	this date. See page 5.																
	09	311	26.5	..	42.0																	
	10	326	26.5		41.1																	
	11	341	26.5		40.2																	
	12	356	26.6	S 12	39.4	354	31.8	6.3	S 11	14.8	9.9	61.0	N 40	05 53	06 24	06 52	06 52	07 34	08 12	08 48		
	13	11	26.6		38.5	8	57.1	6.4	11	04.9	9.9	61.0	35	05 50	06 19	06 45	06 45	07 29	08 10	08 48		
	14	26	26.6		37.7	23	22.5	6.4	10	55.0	10.0	61.0	30	05 47	06 15	06 39	06 39	07 25	08 08	08 49		
	15	41	26.7	..	36.8	37	47.9	6.5	10	45.0	10.0	61.0	20	05 40	06 06	06 29	06 28	07 18	08 05	08 50		
	16	56	26.7		35.9	52	13.4	6.5	10	35.0	10.2	61.0	N 10	05 33	05 58	06 20	06 18	07 12	08 03	08 52		
17	71	26.7		35.1	66	38.9	6.6	10	24.8	10.2	61.0	0	05 25	05 50	06 11	06 09	07 06	08 01	08 53			
18	86	26.8	S 12	34.2	81	04.5	6.7	S 10	14.6	10.2	61.0	S 10	05 15	05 40	06 02	06 00	07 00	07 58	08 54			
19	101	26.8		33.4	95	30.2	6.7	10	04.4	10.3	60.9	20	05 03	05 29	05 52	05 50	06 54	07 56	08 55			
20	116	26.8		32.5	109	55.9	6.8	9	54.1	10.4	60.9	30	04 47	05 16	05 41	05 39	06 47	07 53	08 56			
21	131	26.8	..	31.6	124	21.7	6.9	9	43.7	10.4	60.9	35	04 36	05 08	05 34	05 33	06 43	07 51	08 57			
22	146	26.9		30.8	138	47.6	6.9	9	33.3	10.5	60.9	40	04 24	04 58	05 27	05 25	06 38	07 49	08 58			
23	161	26.9		29.9	153	13.5	7.0	9	22.8	10.6	60.9	45	04 08	04 47	05 18	05 17	06 32	07 47	08 59			
THURSDAY	16	00	176	26.9	S 12	29.0	167	39.5	7.0	S	9	12.2	10.6	60.8	S 50	03 48	04 33	05 08	05 06	06 26	07 44	09 01
	01	191	27.0		28.2	182	05.5	7.1	9	01.6	10.6	60.8	52	03 39	04 26	05 03	05 02	06 23	07 43	09 01		
	02	206	27.0		27.3	196	31.6	7.1	8	51.0	10.7	60.8	54	03 27	04 18	04 58	04 56	06 20	07 42	09 02		
	03	221	27.1	..	26.4	210	57.7	7.2	8	40.3	10.8	60.8	56	03 14	04 09	04 51	04 51	06 16	07 41	09 03		
	04	236	27.1		25.6	225	23.9	7.3	8	29.5	10.8	60.8	58	02 58	03 59	04 45	04 44	06 12	07 39	09 03		
	05	251	27.1		24.7	239	50.2	7.4	8	18.7	10.8	60.7	S 60	02 39	03 48	04 37	04 36	06 07	07 37	09 04		
	06	266	27.2	S 12	23.9	254	16.6	7.4	S	8	07.9	10.9	60.7	Sun-set		Twilight		Moonset				
	07	281	27.2		23.0	268	43.0	7.4	7	57.0	10.9	60.7	Lat.					15	16	17	18	
	08	296	27.2		22.1	283	09.4	7.5	7	46.1	11.0	60.7		h m	h m	h m	h m	h m	h m	h m	h m	
	09	311	27.3	..	21.3	297	35.9	7.6	7	35.1	11.0	60.6	N 72	15 41	16 59	18 19	16 08	18 14	20 12	22 06		
	10	326	27.3		20.4	312	02.5	7.7	7	24.1	11.1	60.6	N 70	16 00	17 08	18 20	16 27	18 23	20 14	22 01		
	11	341	27.3		19.5	326	29.2	7.7	7	13.0	11.0	60.6	68	16 15	17 16	18 21	16 42	18 30	20 15	21 56		
	12	356	27.4	S 12	18.7	340	55.9	7.7	S	7	02.0	11.2	60.6	66	16 27	17 22	18 23	16 54	18 36	20 16	21 53	
	13	11	27.4		17.8	355	22.6	7.8	6	50.8	11.1	60.5	64	16 37	17 28	18 24	17 03	18 41	20 17	21 49		
	14	26	27.5		16.9	9	49.4	7.9	6	39.7	11.2	60.5	62	16 46	17 33	18 25	17 11	18 46	20 18	21 47		
	15	41	27.5	..	16.1	24	16.3	8.0	6	28.5	11.2	60.5	60	16 53	17 37	18 26	17 19	18 50	20 18	21 44		
	16	56	27.5		15.2	38	43.3	8.0	6	17.3	11.3	60.5	N 58	17 00	17 41	18 27	17 25	18 53	20 19	21 42		
17	71	27.6		14.3	53	10.3	8.0	6	06.0	11.3	60.4	56	17 06	17 44	18 28	17 30	18 56	20 19	21 40			
18	86	27.6	S 12	13.4	67	37.3	8.1	S	5	54.7	11.3	60.4	54	17 11	17 47	18 29	17 35	18 59	20 20	21 38		
19	101	27.7		12.6	82	04.4	8.2	5	43.4	11.3	60.4	52	17 15	17 50	18 30	17 40	19 01	20 20	21 37			
20	116	27.7		11.7	96	31.6	8.3	5	32.1	11.3	60.4	50	17 20	17 53	18 31	17 44	19 03	20 21	21 36			
21	131	27.7	..	10.8	110	58.9	8.2	5	20.8	11.4	60.3	45	17 29	17 59	18 33	17 53	19 08	20 22	21 33			
22	146	27.8		10.0	125	26.1	8.4	5	09.4	11.4	60.3	N 40	17 37	18 05	18 36	18 00	19 12	20 22	21 30			
23	161	27.8		09.1	139	53.5	8.4	4	58.0	11.4	60.3	35	17 43	18 09	18 39	18 06	19 15	20 23	21 28			
FRIDAY	17	00	176	27.9	S 12	08.2	154	20.9	8.5	S	4	46.6	11.4	60.2	N 40	17 37	18 05	18 36	18 00	19 12	20 22	21 30
	01	191	27.9		07.4	168	48.4	8.5	4	35.2	11.5	60.2	35	17 43	18 09	18 39	18 06	19 15	20 23	21 28		
	02	206	27.9		06.5	183	15.9	8.6	4	23.7	11.4	60.2	30	17 49	18 14	18 42	18 11	19 18	20 23	21 26		
	03	221	28.0	..	05.6	197	43.5	8.6	4	12.3	11.5	60.1	20	18 00	18 22	18 48	18 21	19 24	20 24	21 23		
	04	236	28.0		04.7	212	11.1	8.7	4	00.8	11.5	60.1	N 10	18 09	18 30	18 55	18 29	19 28	20 25	21 20		
	05	251	28.1		03.9	226	38.8	8.7	3	49.3	11.5	60.1	0	18 18	18 39	19 03	18 36	19 32	20 26	21 17		
	06	266	28.1	S 12	03.0	241	06.5	8.8	S	3	37.8	11.5	60.0	S 10	18 26	18 48	19 13	18 44	19 36	20 26	21 14	
	07	281	28.2		02.1	255	34.3	8.9	3	26.3	11.5	60.0	20	18 36	18 58	19 25	18 52	19 41	20 27	21 11		
	08	296	28.2		01.2	270	02.2	8.9	3	14.8	11.5	60.0	30	18 47	19 12	19 41	19 01	19 46	20 28	21 08		
	09	311	28.2	12	00.4	284	30.1	8.9	3	03.3	11.5	59.9	35	18 53	19 20	19 51	19 06	19 48	20 28	21 06		
	10	326	28.3	11	59.5	298	58.0	9.0	2	51.8	11.6	59.9	40	19 01	19 29	20 03	19 12	19 51	20 28	21 04		
	11	341	28.3		58.6	313	26.0	9.1	2	40.2	11.5	59.9	45	19 09	19 40	20 18	19 18	19 55	20 29	21 01		
	12	356	28.4	S 11	57.7	327	54.1	9.1	S	2	28.7	11.5	59.8	S 50	19 19	19 54	20 38	19 26	19 59	20 29	20 58	
	13	11	28.4		56.9	342	22.2	9.2	2	17.2	11.5	59.8	52	19 24	20 01	20 48	19 30	20 01	20 30	20 57		
	14	26	28.5		56.0	356	50.4	9.2	2	05.7	11.6	59.8	54	19 29	20 09	20 59	19 34	20 03	20 30	20 55		
	15	41	28.5	..	55.1	11	18.6	9.2	1	54.1	11.5	59.7	56	1								

G.M.T.		ARIES		VENUS -4.3		MARS 0.0		JUPITER -1.5		SATURN +0.8		STARS		
		G.H.A.		G.H.A.	Dec.	G.H.A.	Dec.	G.H.A.	Dec.	G.H.A.	Dec.	Name	S.H.A.	Dec.
SATURDAY	d	h												
	°	'	°	'	°	'	°	'	°	'	°	'	°	'
	18	00	147 43.0	135 38.4	N 8 19.3	56 47.3	N 26 42.0	210 45.2	S 21 18.4	210 41.0	S 21 03.7	Acamar	315 48.4	S 40 28.0
	01	162 45.4	150 39.1	20.4	71 49.4	42.0	225 47.1	18.3	225 43.2	03.7	Achernar	335 56.5	S 57 26.4	
	02	177 47.9	165 39.8	21.5	86 51.4	41.9	240 49.0	18.2	240 45.4	03.6	Acrux	173 52.9	S 62 52.9	
	03	192 50.4	180 40.6	22.6	101 53.5	41.9	255 50.9	18.1	255 47.6	03.6	Adhara	255 43.3	S 28 55.4	
	04	207 52.8	195 41.3	23.7	116 55.6	41.8	270 52.8	18.0	270 49.8	03.5	Aldebaran	291 34.7	N 16 25.8	
	05	222 55.3	210 42.0	24.9	131 57.7	41.7	285 54.7	17.9	285 52.0	03.5				
	06	237 57.8	225 42.7	N 8 26.0	146 59.7	N 26 41.7	300 56.6	S 21 17.8	300 54.1	S 21 03.4	Alioth	166 55.0	N 56 10.0	
	07	253 00.2	240 43.4	27.1	162 01.8	41.6	315 58.5	17.7	315 56.3	03.4	Alkaid	153 29.8	N 49 30.2	
	08	268 02.7	255 44.1	28.2	177 03.9	41.6	331 00.4	17.6	330 58.5	03.4	Al Na'ir	28 33.8	S 47 09.1	
	09	283 05.1	270 44.8	29.3	192 06.0	41.5	346 02.3	17.5	346 00.7	03.3	Alnilam	276 26.3	S 1 13.8	
	10	298 07.6	285 45.5	30.4	207 08.0	41.4	1 04.2	17.5	1 02.9	03.3	Alphard	218 34.6	S 8 29.5	
	11	313 10.1	300 46.2	31.5	222 10.1	41.4	16 06.1	17.4	16 05.1	03.2				
	12	328 12.5	315 47.0	N 8 32.6	237 12.2	N 26 41.3	31 08.0	S 21 17.3	31 07.3	S 21 03.2	Alphecca	126 44.5	N 26 50.5	
	13	343 15.0	330 47.7	33.7	252 14.2	41.3	46 09.9	17.2	46 09.5	03.1	Alpheratz	358 24.7	N 28 52.5	
	14	358 17.5	345 48.4	34.8	267 16.3	41.2	61 11.8	17.1	61 11.7	03.1	Altair	62 47.1	N 8 45.8	
	15	13 19.9	0 49.1	35.8	282 18.4	41.2	76 13.7	17.0	76 13.8	03.0	Ankaa	353 55.0	S 42 31.3	
	16	28 22.4	15 49.8	36.9	297 20.4	41.1	91 15.6	16.9	91 16.0	03.0	Antares	113 14.8	S 26 20.7	
	17	43 24.9	30 50.6	38.0	312 22.5	41.0	106 17.5	16.8	106 18.2	03.0				
	18	58 27.3	45 51.3	N 8 39.1	327 24.5	N 26 41.0	121 19.4	S 21 16.7	121 20.4	S 21 02.9	Arcturus	146 31.7	N 19 22.9	
	19	73 29.8	60 52.0	40.2	342 26.6	40.9	136 21.3	16.6	136 22.6	02.9	Atria	108 52.3	S 68 57.1	
	20	88 32.3	75 52.8	41.3	357 28.7	40.9	151 23.3	16.5	151 24.8	02.8	Avior	234 33.6	S 59 23.3	
21	103 34.7	90 53.5	42.4	12 30.7	40.8	166 25.2	16.4	166 27.0	02.8	Bellatrix	279 14.3	N 6 18.7		
22	118 37.2	105 54.2	43.5	27 32.8	40.7	181 27.1	16.4	181 29.2	02.7	Betelgeuse	271 43.9	N 7 23.8		
23	133 39.6	120 54.9	44.6	42 34.8	40.7	196 29.0	16.3	196 31.4	02.7					
SUNDAY	19	00	148 42.1	135 55.7	N 8 45.7	57 36.9	N 26 40.6	211 30.9	S 21 16.2	211 33.5	S 21 02.6	Canopus	264 13.4	S 52 40.8
	01	163 44.6	150 56.4	46.8	72 38.9	40.6	226 32.8	16.1	226 35.7	02.6	Capella	281 32.7	N 45 57.6	
	02	178 47.0	165 57.1	47.9	87 41.0	40.5	241 34.7	16.0	241 37.9	02.6	Deneb	49 58.8	N 45 08.4	
	03	193 49.5	180 57.9	49.0	102 43.0	40.4	256 36.6	15.9	256 40.1	02.5	Denebola	183 13.7	N 14 47.2	
	04	208 52.0	195 58.6	50.1	117 45.1	40.4	271 38.5	15.8	271 42.3	02.5	Diphda	349 35.8	S 18 12.2	
	05	223 54.4	210 59.4	51.2	132 47.1	40.3	286 40.4	15.7	286 44.5	02.4				
	06	238 56.9	226 00.1	N 8 52.2	147 49.2	N 26 40.3	301 42.3	S 21 15.6	301 46.7	S 21 02.4	Dubhe	194 39.5	N 61 57.5	
	07	253 59.4	241 00.9	53.3	162 51.2	40.2	316 44.2	15.5	316 48.9	02.3	Elath	279 02.5	N 28 34.5	
	08	269 01.8	256 01.6	54.4	177 53.3	40.2	331 46.1	15.4	331 51.1	02.3	Eltanin	91 04.8	N 51 29.4	
	09	284 04.3	271 02.3	55.5	192 55.3	40.1	346 48.0	15.4	346 53.2	02.2	Enif	34 26.2	N 9 41.7	
	10	299 06.8	286 03.1	56.6	207 57.4	40.0	1 49.9	15.3	1 55.4	02.2	Fomalhaut	16 07.9	S 29 49.9	
	11	314 09.2	301 03.8	57.7	222 59.4	40.0	16 51.8	15.2	16 57.6	02.2				
	12	329 11.7	316 04.6	N 8 58.8	238 01.4	N 26 39.9	31 53.7	S 21 15.1	31 59.8	S 21 02.1	Gacrux	172 44.5	S 56 53.6	
	13	344 14.1	331 05.3	8 59.8	253 03.5	39.9	46 55.6	15.0	47 02.0	02.1	Gienah	176 32.7	S 17 19.6	
	14	359 16.6	346 06.1	9 00.9	268 05.5	39.8	61 57.5	14.9	62 04.2	02.0	Hadar	149 43.7	S 60 19.0	
	15	14 19.1	1 06.8	02.0	283 07.5	39.7	76 59.4	14.8	77 06.4	02.0	Hamal	328 45.5	N 23 16.7	
	16	29 21.5	16 07.6	03.1	298 09.6	39.7	92 01.4	14.7	92 08.6	01.9	Kaus Aust.	84 36.5	S 34 24.1	
	17	44 24.0	31 08.4	04.2	313 11.6	39.6	107 03.3	14.6	107 10.8	01.9				
	18	59 26.5	46 09.1	N 9 05.3	328 13.6	N 26 39.6	122 05.2	S 21 14.5	122 13.0	S 21 01.8	Kochab	137 18.1	N 74 18.7	
	19	74 28.9	61 09.9	06.3	343 15.7	39.5	137 07.1	14.4	137 15.1	01.8	Markab	14 18.0	N 14 59.6	
	20	89 31.4	76 10.6	07.4	358 17.7	39.4	152 09.0	14.3	152 17.3	01.8	Menkar	314 56.5	N 3 56.1	
	21	104 33.9	91 11.4	08.5	13 19.7	39.4	167 10.9	14.2	167 19.5	01.7	Menkent	148 54.0	S 36 10.6	
	22	119 36.3	106 12.2	09.6	28 21.8	39.3	182 12.8	14.2	182 21.7	01.7	Miaplacidus	221 47.1	S 69 33.6	
23	134 38.8	121 12.9	10.7	43 23.8	39.3	197 14.7	14.1	197 23.9	01.6					
MONDAY	20	00	149 41.3	136 13.7	N 9 11.7	58 25.8	N 26 39.2	212 16.6	S 21 14.0	212 26.1	S 21 01.6	Mirfak	309 37.0	N 49 43.5
	01	164 43.7	151 14.5	12.8	73 27.8	39.1	227 18.5	13.9	227 28.3	01.5	Nunki	76 47.5	S 26 20.7	
	02	179 46.2	166 15.2	13.9	88 29.9	39.1	242 20.4	13.8	242 30.5	01.5	Peacock	54 22.0	S 56 51.6	
	03	194 48.6	181 16.0	15.0	103 31.9	39.0	257 22.3	13.7	257 32.7	01.4	Pollux	244 15.7	N 28 07.2	
	04	209 51.1	196 16.8	16.0	118 33.9	39.0	272 24.2	13.6	272 34.9	01.4	Procyon	245 40.8	N 5 19.3	
	05	224 53.6	211 17.5	17.1	133 35.9	38.9	287 26.1	13.5	287 37.1	01.4				
	06	239 56.0	226 18.3	N 9 18.2	148 37.9	N 26 38.8	302 28.1	S 21 13.4	302 39.2	S 21 01.3	Rasalhague	96 43.3	N 12 35.2	
	07	254 58.5	241 19.1	19.3	163 40.0	38.8	317 30.0	13.3	317 41.4	01.3	Regulus	208 25.2	N 12 09.3	
	08	270 01.0	256 19.9	20.3	178 42.0	38.7	332 31.9	13.2	332 43.6	01.2	Rigel	281 49.9	S 8 15.0	
	09	285 03.4	271 20.7	21.4	193 44.0	38.7	347 33.8	13.1	347 45.8	01.2	Rigel Kent.	140 45.5	S 60 40.2	
	10	300 05.9	286 21.4	22.5	208 46.0	38.6	2 35.7	13.1	2 48.0	01.1	Sabik	102 58.0	S 15 40.6	
	11	315 08.4	301 22.2	23.6	223 48.0	38.5	17 37.6	13.0	17 50.2	01.1				
	12	330 10.8	316 23.0	N 9 24.6	238 50.0	N 26 38.5	32 39.5	S 21 12.9	32 52.4	S 21 01.0	Schedar	350 26.0	N 56 19.5	
	13	345 13.3	331 23.8	25.7	253 52.0	38.4	47 41.4	12.8	47 54.6	01.0	Shaula	97 15.8	S 37 04.4	
	14	0 15.7	346 24.6	26.8	268 54.0	38.4	62 43.3	12.7	62 56.8	01.0	Sirius	259 08.4	S 16 40.0	
	15	15 18.2	1 25.4	27.8	283 56.1	38.3	77 45.2	12.6	77 59.0	00.9	Spica	159 12.7	S 10 57.5	
	16	30 20.7	16 26.2	28.9	298 58.1	38.2	92 47.1	12.5	93 01.2	00.9	Suhail	223 21.1	S 43 16.7	
	17	45 23.1	31 26.9	30.0	314 00.1	38.2	107 49.0	12.4	108 03.4	00.8				
	18	60 25.6	46 27.7	N 9 31.0	329 02.1	N 26 38.1	122 51.0	S 21 12.3	123 05.6	S 21 00.8	Vega	81 06.0	N 38 44.7	
	19	75 28.1	61 28.5	32.1	344 04.1	38.1	137 52.9	12.2	138 07.7	00.7	Zuben'ubi	137 49.1	S 15 52.8	
	20	90 30.5	76 29.3	33.2	359 06.1	38.0	152 54.8	12.1	153 09.9	00.7				
	21	105 33.0	91 30.1	34.2	14 08.1	37.9	167 56.7	12.0	168 12.1	00.7				
	22	120 35.5	106 30.9	35.3	29 10.1	37.9	182 58.6	11.9	183 14.3	00.6	Venus	347 13.6	14 56	
23	135 37.9	121 31.7	36.4	44 12.1	37.8	198 00.5	11.9	198 16.5	00.6	Mars	268 54.8	20 07		
		h	m											
Mer. Pass. 14		02.9	v	0.8	d	1.1	v	2.0	d	0.1	v	1.9	d	0.1
											v	2.2	d	0.0

G.M.T.		SUN		MOON					Lat.	Twilight		Sun-rise	Moonrise							
		G.H.A.	Dec.	G.H.A.	φ	Dec.	d	H.P.		Naut.	Civil		18	19	20	21				
d	h	°	'	°	'	°	'	'	°	h	m	h	m	h	m	h	m	h	m	
18	00	176	28-9	S 11	47-2	141	34-7	9-7 S	0	10-7	11-4	59-4	N 72	05 58	07 17	08 32	08 35	08 29	08 23	08 15
	01	191	29-0		46-3	156	03-4	9-7 N	0	00-7	11-5	59-4	N 70	05 58	07 09	08 15	08 37	08 37	08 37	08 39
	02	206	29-0		45-4	170	32-1	9-8	0	12-2	11-4	59-3	68	05 58	06 57	07 52	08 40	08 49	08 59	09 11
	03	221	29-1	..	44-6	185	00-9	9-8	0	23-6	11-4	59-3	66	05 57	06 52	07 42	08 41	08 54	09 07	09 23
	04	236	29-1		43-7	199	29-7	9-9	0	35-0	11-3	59-3	64	05 57	06 48	07 35	08 42	08 58	09 14	09 34
05	251	29-2		42-8	213	58-6	9-9	0	46-3	11-4	59-2	62	05 56	06 45	07 28	08 43	09 01	09 21	09 43	
SATURDAY	06	266	29-2	S 11	41-9	228	27-5	10-0 N	0	57-7	11-3	59-2	N 58	05 56	06 41	07 22	08 43	09 04	09 26	09 50
	07	281	29-3		41-0	242	56-5	10-0	1	09-0	11-3	59-1	56	05 55	06 38	07 17	08 44	09 07	09 31	09 57
	08	296	29-3		40-2	257	25-5	10-0	1	20-3	11-3	59-1	54	05 55	06 36	07 12	08 45	09 10	09 35	10 03
	09	311	29-4	..	39-3	271	54-5	10-1	1	31-6	11-3	59-1	52	05 54	06 33	07 08	08 45	09 12	09 39	10 09
	10	326	29-4		38-4	286	23-6	10-1	1	42-9	11-2	59-0	50	05 53	06 30	07 04	08 46	09 14	09 43	10 14
SUNDAY	11	341	29-5		37-5	300	52-7	10-2	1	54-1	11-2	59-0	45	05 51	06 25	06 55	08 47	09 19	09 51	10 25
	12	356	29-6	S 11	36-6	315	21-9	10-2 N	2	05-3	11-2	59-0	N 40	05 49	06 20	06 48	08 48	09 22	09 58	10 34
	13	11	29-6		35-7	329	51-1	10-2	2	16-5	11-1	58-9	35	05 47	06 16	06 42	08 48	09 26	10 03	10 42
	14	26	29-7		34-9	344	20-3	10-3	2	27-6	11-2	58-9	30	05 44	06 12	06 37	08 49	09 29	10 08	10 49
	15	41	29-7	..	34-0	358	49-6	10-3	2	38-8	11-0	58-8	20	05 39	06 05	06 27	08 50	09 34	10 17	11 01
SUNDAY	16	56	29-8		33-1	373	18-9	10-3	2	49-8	11-1	58-8	N 10	05 33	05 57	06 19	08 52	09 39	10 25	11 11
	17	71	29-8		32-2	27	48-2	10-4	3	00-9	11-0	58-8	0	05 25	05 49	06 11	08 53	09 43	10 32	11 21
	18	86	29-9	S 11	31-3	42	17-6	10-5 N	3	11-9	11-0	58-7	S 10	05 16	05 41	06 02	08 54	09 48	10 40	11 31
	19	101	29-9		30-4	56	47-1	10-4	3	22-9	11-0	58-7	20	05 04	05 31	05 54	08 55	09 52	10 48	11 42
	20	116	30-0		29-5	71	16-5	10-5	3	33-9	10-9	58-6	30	04 49	05 19	05 43	08 56	09 58	10 57	11 54
SUNDAY	21	131	30-0	..	28-7	85	46-0	10-5	3	44-8	10-9	58-6	35	04 40	05 11	05 37	08 57	10 01	11 02	12 01
	22	146	30-1		27-8	100	15-5	10-6	3	55-7	10-8	58-6	40	04 28	05 02	05 31	08 58	10 04	11 08	12 09
	23	161	30-2		26-9	114	45-1	10-6	4	06-5	10-8	58-5	45	04 14	04 52	05 23	08 59	10 09	11 15	12 19
	00	176	30-2	S 11	26-0	129	14-7	10-6 N	4	17-3	10-8	58-5	S 50	03 55	04 38	05 13	09 01	10 14	11 24	12 30
	01	191	30-3		25-1	143	44-3	10-6	4	28-1	10-7	58-4	52	03 46	04 32	05 09	09 01	10 16	11 27	12 35
SUNDAY	02	206	30-3		24-2	158	13-9	10-7	4	38-8	10-7	58-4	54	03 35	04 25	05 04	09 02	10 18	11 32	12 41
	03	221	30-4	..	23-3	172	43-6	10-7	4	49-5	10-7	58-4	56	03 23	04 17	04 58	09 03	10 21	11 37	12 48
	04	236	30-4		22-4	187	13-3	10-8	5	00-2	10-6	58-3	58	03 09	04 08	04 52	09 03	10 24	11 42	12 56
	05	251	30-5		21-6	201	43-1	10-8	5	10-8	10-6	58-3	S 60	02 51	03 57	04 45	09 04	10 28	11 48	13 04
	06	266	30-6	S 11	20-7	216	12-9	10-8 N	5	21-4	10-5	58-2								
SUNDAY	07	281	30-6		19-8	230	42-7	10-8	5	31-9	10-4	58-2	Lat.	Sun-set	Twilight		Moonset			
	08	296	30-7		18-9	245	12-5	10-9	5	42-3	10-5	58-2			Civil	Naut.	18	19	20	21
	09	311	30-7	..	18-0	259	42-4	10-9	5	52-8	10-4	58-1	h m	h m	h m	h m	h m	h m	h m	h m
	10	326	30-8		17-1	274	12-3	10-9	6	03-2	10-3	58-1	N 72	15 57	17 13	18 32	22 06	23 57	25 46	01 46
	11	341	30-8		16-2	288	42-2	10-9	6	13-5	10-3	58-0	N 70	16 14	17 21	18 32	22 01	23 44	25 24	01 24
SUNDAY	12	356	30-9	S 11	15-3	303	12-1	11-0 N	6	23-8	10-2	58-0	68	16 27	17 27	18 32	21 56	23 33	25 07	01 07
	13	11	31-0		14-4	317	42-1	11-0	6	34-0	10-2	57-9	66	16 38	17 32	18 32	21 53	23 25	24 54	00 54
	14	26	31-0		13-5	332	12-1	11-0	6	44-2	10-1	57-9	64	16 47	17 37	18 32	21 49	23 18	24 42	00 42
	15	41	31-1	..	12-7	346	42-1	11-0	6	54-3	10-1	57-9	62	16 54	17 41	18 32	21 47	23 12	24 33	00 33
	16	56	31-1		11-8	1 12-1	11-1		7	04-4	10-0	57-8	60	17 01	17 44	18 33	21 44	23 06	24 24	00 24
SUNDAY	17	71	31-2		10-9	15	42-2	11-1	7	14-4	10-0	57-8	N 58	17 07	17 48	18 33	21 42	23 02	24 17	00 17
	18	86	31-3	S 11	10-0	30	12-3	11-1 N	7	24-4	9-9	57-7	56	17 12	17 50	18 34	21 40	22 58	24 11	00 11
	19	101	31-3		09-1	44	42-4	11-1	7	34-3	9-9	57-7	54	17 17	17 53	18 34	21 38	22 54	24 05	00 05
	20	116	31-4		08-2	59	12-5	11-2	7	44-2	9-8	57-7	52	17 21	17 56	18 35	21 37	22 50	24 00	00 00
	21	131	31-5	..	07-3	73	42-7	11-2	8	03-8	9-7	57-6	50	17 25	17 58	18 36	21 36	22 47	23 56	25 01
MONDAY	22	146	31-5		06-4	88	12-9	11-2	8	13-5	9-6	57-5	45	17 33	18 03	18 37	21 33	22 41	23 46	24 48
	23	161	31-6		05-5	102	43-1	11-2												
	00	176	31-6	S 11	04-6	117	13-3	11-2 N	8	23-1	9-6	57-5	N 40	17 40	18 08	18 39	21 30	22 35	23 38	24 37
	01	191	31-7		03-7	131	43-5	11-3	8	32-7	9-6	57-5	35	17 46	18 12	18 42	21 28	22 30	23 31	24 28
	02	206	31-8		02-8	146	13-8	11-3	8	42-3	9-4	57-4	30	17 52	18 16	18 44	21 26	22 27	23 25	24 21
MONDAY	03	221	31-8	..	01-9	160	44-1	11-3	8	51-7	9-5	57-4	20	18 01	18 24	18 49	21 23	22 19	23 14	24 07
	04	236	31-9		01-0	175	14-4	11-3	9	01-2	9-3	57-4	N 10	18 09	18 31	18 55	21 20	22 13	23 05	23 55
	05	251	32-0	11	00-1	189	44-7	11-3	9	10-5	9-3	57-3	0	18 17	18 38	19 03	21 17	22 07	22 56	23 44
	06	266	32-0	S 10	59-2	204	15-0	11-4 N	9	19-8	9-2	57-3	S 10	18 25	18 47	19 12	21 14	22 01	22 47	23 33
	07	281	32-1		58-3	218	45-4	11-3	9	29-0	9-2	57-2	20	18 34	18 57	19 23	21 11	21 55	22 38	23 21
MONDAY	08	296	32-2		57-4	233	15-7	11-4	9	38-2	9-1	57-2	30	18 44	19 09	19 38	21 08	21 47	22 27	23 08
	09	311	32-2	..	56-5	247	46-1	11-4	9	4										

G.M.T.	ARIES			VENUS -4.3			MARS +0.1			JUPITER -1.5			SATURN +0.9			STARS		
	G.H.A.	G.H.A.	Dec.	G.H.A.	Dec.	G.H.A.	Dec.	G.H.A.	Dec.	G.H.A.	Dec.	G.H.A.	Dec.	Name	S.H.A.	Dec.		
d h	° ' "	° ' "	° ' "	° ' "	° ' "	° ' "	° ' "	° ' "	° ' "	° ' "	° ' "	° ' "	° ' "		° ' "	° ' "		
21	150 40.4	136 32.5 N	9 37.4	59 14.1 N	26 37.8	213 02.4 S	21 11.8	213 18.7 S	21 00.5	213 18.7 S	21 00.5	213 18.7 S	21 00.5	Acamar	315 48.5	S 40 28.0		
01	165 42.9	151 33.3	38.5	74 16.1	37.7	228 04.3	11.7	228 20.9	00.5	228 20.9	00.5	228 20.9	00.5	Alchernar	335 56.6	S 57 26.4		
02	180 45.3	166 34.1	39.6	89 18.1	37.6	243 06.2	11.6	243 23.1	00.4	243 23.1	00.4	243 23.1	00.4	Acrux	173 52.9	S 62 52.9		
03	195 47.8	181 34.9	40.6	104 20.1	37.6	258 08.2	11.5	258 25.3	00.4	258 25.3	00.4	258 25.3	00.4	Adhara	255 43.3	S 28 55.4		
04	210 50.2	196 35.7	41.7	119 22.1	37.5	273 10.1	11.4	273 27.5	00.3	273 27.5	00.3	273 27.5	00.3	Aldebaran	291 34.7	N 16 25.8		
05	225 52.7	211 36.5	42.7	134 24.1	37.5	288 12.0	11.3	288 29.7	00.3	288 29.7	00.3	288 29.7	00.3					
06	240 55.2	226 37.4 N	9 43.8	149 26.0 N	26 37.4	303 13.9 S	21 11.2	303 31.9 S	21 00.3	303 31.9 S	21 00.3	303 31.9 S	21 00.3	Alioth	166 55.0	N 56 10.0		
07	255 57.6	241 38.2	44.9	164 28.0	37.3	318 15.8	11.1	318 34.1	00.2	318 34.1	00.2	318 34.1	00.2	Alkaid	153 29.8	N 49 30.2		
08	271 00.1	256 39.0	45.9	179 30.0	37.3	333 17.7	11.0	333 36.3	00.2	333 36.3	00.2	333 36.3	00.2	Al Na'ir	28 33.8	S 47 09.1		
09	286 02.6	271 39.8	47.0	194 32.0	37.2	348 19.6	10.9	348 38.4	00.1	348 38.4	00.1	348 38.4	00.1	Alnilam	276 26.4	S 1 13.8		
10	301 05.0	286 40.6	48.0	209 34.0	37.2	3 21.5	10.8	3 40.6	00.1	3 40.6	00.1	3 40.6	00.1	Alphard	218 34.6	S 8 29.5		
11	316 07.5	301 41.4	49.1	224 36.0	37.1	18 23.4	10.7	18 42.8	00.0	18 42.8	00.0	18 42.8	00.0					
12	331 10.0	316 42.3 N	9 50.1	239 38.0 N	26 37.0	33 25.4 S	21 10.7	33 45.0 S	21 00.0	33 45.0 S	21 00.0	33 45.0 S	21 00.0	Alphecca	126 44.5	N 26 50.5		
13	346 12.4	331 43.1	51.2	254 40.0	37.0	48 27.3	10.6	48 47.2	20 59.9	48 47.2	20 59.9	48 47.2	20 59.9	Alpheratz	358 24.7	N 28 52.5		
14	1 14.9	346 43.9	52.2	269 41.9	36.9	63 29.2	10.5	63 49.4	59.9	63 49.4	59.9	63 49.4	59.9	Altair	62 47.0	N 8 45.8		
15	16 17.3	1 44.7	53.3	284 43.9	36.9	78 31.1	10.4	78 51.6	59.9	78 51.6	59.9	78 51.6	59.9	Ankaa	353 55.0	S 42 31.3		
16	31 19.8	16 45.5	54.4	299 45.9	36.8	93 33.0	10.3	93 53.8	59.8	93 53.8	59.8	93 53.8	59.8	Antares	113 14.8	S 26 20.7		
17	46 22.3	31 46.4	55.4	314 47.9	36.7	108 34.9	10.2	108 56.0	59.8	108 56.0	59.8	108 56.0	59.8					
18	61 24.7	46 47.2 N	9 56.5	329 49.9 N	26 36.7	123 36.8 S	21 10.1	123 58.2 S	20 59.7	123 58.2 S	20 59.7	123 58.2 S	20 59.7	Arcturus	146 31.6	N 19 22.9		
19	76 27.2	61 48.0	57.5	344 51.8	36.6	138 38.7	10.0	139 00.4	59.7	139 00.4	59.7	139 00.4	59.7	Atria	108 52.2	S 68 57.1		
20	91 29.7	76 48.9	58.6	359 53.8	36.5	153 40.7	09.9	154 02.6	59.6	154 02.6	59.6	154 02.6	59.6	Avior	234 33.6	S 59 23.3		
21	106 32.1	91 49.7	59.6	14 55.8	36.5	168 42.6	09.8	169 04.8	59.6	169 04.8	59.6	169 04.8	59.6	Bellatrix	279 14.3	N 6 18.7		
22	121 34.6	106 50.5	10 00.7	29 57.8	36.4	183 44.5	09.7	184 07.0	59.6	184 07.0	59.6	184 07.0	59.6	Betelgeuse	271 43.9	N 7 23.8		
23	136 37.1	121 51.4	01.7	44 59.7	36.4	198 46.4	09.6	199 09.2	59.5	199 09.2	59.5	199 09.2	59.5					
22	151 39.5	136 52.2 N	10 02.7	60 01.7 N	26 36.3	213 48.3 S	21 09.6	214 11.4 S	20 59.5	214 11.4 S	20 59.5	214 11.4 S	20 59.5	Canopus	264 13.4	S 52 40.8		
01	166 42.0	151 53.0	03.8	75 03.7	36.2	228 50.2	09.5	229 13.6	59.4	229 13.6	59.4	229 13.6	59.4	Capella	281 32.7	N 45 57.6		
02	181 44.5	166 53.9	04.8	90 05.6	36.2	243 52.1	09.4	244 15.8	59.4	244 15.8	59.4	244 15.8	59.4	Deneb	49 58.8	N 45 08.4		
03	196 46.9	181 54.7	05.9	105 07.6	36.1	258 54.0	09.3	259 18.0	59.3	259 18.0	59.3	259 18.0	59.3	Denebola	183 13.7	N 14 47.2		
04	211 49.4	196 55.6	06.9	120 09.6	36.1	273 56.0	09.2	274 20.1	59.3	274 20.1	59.3	274 20.1	59.3	Diphda	349 35.8	S 18 12.2		
05	226 51.8	211 56.4	08.0	135 11.5	36.0	288 57.9	09.1	289 22.3	59.3	289 22.3	59.3	289 22.3	59.3					
06	241 54.3	226 57.3 N	10 09.0	150 13.5 N	26 35.9	303 59.8 S	21 09.0	304 24.5 S	20 59.2	304 24.5 S	20 59.2	304 24.5 S	20 59.2	Dubhe	194 39.5	N 61 57.5		
07	256 56.8	241 58.1	10.1	165 15.5	35.9	319 01.7	08.9	319 26.7	59.2	319 26.7	59.2	319 26.7	59.2	Elnath	279 02.5	N 28 34.5		
08	271 59.2	256 59.0	11.1	180 17.4	35.8	334 03.6	08.8	334 28.9	59.1	334 28.9	59.1	334 28.9	59.1	Eltanin	91 04.8	N 51 29.4		
09	287 01.7	271 59.8	12.2	195 19.4	35.8	349 05.5	08.7	349 31.1	59.1	349 31.1	59.1	349 31.1	59.1	Enif	34 26.2	N 9 41.7		
10	302 04.2	287 00.7	13.2	210 21.3	35.7	4 07.4	08.6	4 33.3	59.0	4 33.3	59.0	4 33.3	59.0	Fomalhaut	16 07.9	S 29 49.9		
11	317 06.6	287 01.5	14.2	225 23.3	35.6	19 09.4	08.5	19 35.5	59.0	19 35.5	59.0	19 35.5	59.0					
12	332 09.1	317 02.4 N	10 15.3	240 25.3 N	26 35.6	34 11.3 S	21 08.4	34 37.7 S	20 58.9	34 37.7 S	20 58.9	34 37.7 S	20 58.9	Gacrux	172 44.5	S 56 53.6		
13	347 11.6	332 03.2	16.3	255 27.2	35.5	49 13.2	08.4	49 39.9	58.9	49 39.9	58.9	49 39.9	58.9	Gienah	176 32.7	S 17 19.6		
14	2 14.0	347 04.1	17.4	270 29.2	35.4	64 15.1	08.3	64 42.1	58.9	64 42.1	58.9	64 42.1	58.9	Hadar	149 43.7	S 60 10.9		
15	17 16.5	2 05.0	18.4	285 31.1	35.4	79 17.0	08.2	79 44.3	58.8	79 44.3	58.8	79 44.3	58.8	Hamal	328 45.6	N 23 16.7		
16	32 19.0	17 05.8	19.4	300 33.1	35.3	94 18.9	08.1	94 46.5	58.8	94 46.5	58.8	94 46.5	58.8	Kaus Aust.	84 36.4	S 34 24.1		
17	47 21.4	32 06.7	20.5	315 35.0	35.3	109 20.9	08.0	109 48.7	58.7	109 48.7	58.7	109 48.7	58.7					
18	62 23.9	47 07.5 N	10 21.5	330 37.0 N	26 35.2	124 22.8 S	21 07.9	124 50.9 S	20 58.7	124 50.9 S	20 58.7	124 50.9 S	20 58.7	Kochab	137 18.1	N 74 18.7		
19	77 26.3	62 08.4	22.5	345 38.9	35.1	139 24.7	07.8	139 53.1	58.6	139 53.1	58.6	139 53.1	58.6	Markab	14 18.0	N 14 59.6		
20	92 28.8	77 09.3	23.6	0 40.9	35.1	154 26.6	07.7	154 55.3	58.6	154 55.3	58.6	154 55.3	58.6	Menkar	314 56.5	N 3 56.1		
21	107 31.3	92 10.1	24.6	15 42.8	35.0	169 28.5	07.6	169 57.5	58.5	169 57.5	58.5	169 57.5	58.5	Menkent	148 54.0	S 36 10.6		
22	122 33.7	107 11.0	25.6	30 44.8	35.0	184 30.4	07.5	184 59.7	58.5	184 59.7	58.5	184 59.7	58.5	Miaplacidus	221 47.1	S 69 33.6		
23	137 36.2	122 11.9	26.7	45 46.7	34.9	199 32.4	07.4	200 01.9	58.5	200 01.9	58.5	200 01.9	58.5					
23	152 38.7	137 12.8 N	10 27.7	60 48.7 N	26 34.8	214 34.3 S	21 07.3	215 04.1 S	20 58.4	215 04.1 S	20 58.4	215 04.1 S	20 58.4	Mirfak	309 37.1	N 49 43.5		
01	167 41.1	152 13.6	28.7	75 50.6	34.8	229 36.2	07.2	230 06.3	58.4	230 06.3	58.4	230 06.3	58.4	Nunki	76 47.5	S 26 20.7		
02	182 43.6	167 14.5	29.8	90 52.6	34.7	244 38.1	07.2	245 08.5	58.3	245 08.5	58.3	245 08.5	58.3	Peacock	54 22.0	S 56 51.5		
03	197 46.1	182 15.4	30.8	105 54.5	34.6	259 40.0	07.1	260 10.7	58.3	260 10.7	58.3	260 10.7	58.3	Pollux	244 15.7	N 28 07.2		
04	212 48.5	197 16.3	31.8	120 56.4	34.6	274 41.9	07.0	275 12.9	58.2	275 12.9	58.2	275 12.9	58.2	Procyon	245 40.8	N 5 19.3		
05	227 51.0	212 17.2	32.9	135 58.4	34.5	289 43.9	06.9	290 15.1	58.2	290 15.1	58.2	290 15.1	58.2					
06	242 53.4	227 18.1 N	10 33.9	151 00.3 N	26 34.5	304 45.8 S	21 06.8	305 17.3 S	20 58.1	305 17.3 S	20 58.1	305 17.3 S	20 58.1	Rasalhague	96 43.3	N 12 35.2		
07	257 55.9	242 18.9	34.9	166 02.3	34.4	319 47.7	06.7	320 19.5	58.1	320 19.5	58.1	320 19.5	58.1	Regulus	208 25.2	N 12 09.3		
08	272 58.4	257 19.8	35.9	181 04.2	34.3	334 49.6	06.6	335 21.7	58.1	335 21.7	58.1	335 21.7	58.1	Rigel	281 49.9	S 8 15.0		
09	288 00.8	272 20.7	37.0	196 06.1	34.3	349 51.5	06.5	350 23.9	58.0	350 23.9	58.0	350 23.9	58.0	Rigel Kent.	140 45.5	S 60 40.2		
10	303 03.3	287 21.6	38.0	211 08.1	34.2	4 53.4	06.4	5 26.1	58.0	5 26.1	58.0	5 26.1	58.0	Sabik	102 58.0	S 15 40.6		
11	318 05.8	302 22.5	39.0	226 10.0	34.1	19 55.4	06.3	20										

G.M.T.	SUN		MOON				Lat.	Twilight		Sun-rise	Moonrise																		
	G.H.A.	Dec.	G.H.A.	<i>v</i>	Dec.	<i>d</i>		H.P.	Naut.		Civil	21	22	23	24														
d	h	°	′	°	′	°	′	°	h	m	h	m	h	m	h	m	h	m											
TUESDAY	21	00	176	33-2	S 10	43-1	105	23-5	11-6	N 11	56-1	8-0	56-6	N 72	05	45	07	03	08	15	08	15	08	06	07	51	□		
	01	191	33-3	42-2	119	54-1	11-6	12	04-1	8-0	56-6	N 70	05	46	06	56	08	01	08	39	08	42	08	51	08	51	09	11	
	02	206	33-4	41-3	134	24-7	11-6	12	12-1	7-9	56-5	68	05	47	06	51	07	50	08	57	09	08	09	08	09	26	09	55	
	03	221	33-5	40-4	148	55-3	11-7	12	20-0	7-8	56-5	66	05	48	06	47	07	40	09	11	09	28	09	51	10	24	10	47	
	04	236	33-5	39-4	163	26-0	11-6	12	27-8	7-8	56-5	64	05	48	06	43	07	32	09	23	09	44	10	11	10	47	11	04	
	05	251	33-6	38-5	177	56-6	11-6	12	35-6	7-6	56-4	62	05	48	06	40	07	25	09	34	09	57	10	27	11	04	11	19	
	06	266	33-7	S 10	37-6	192	27-2	11-7	N 12	43-2	7-6	56-4	N 58	05	49	06	34	07	14	09	50	10	18	10	52	11	32		
	07	281	33-7	36-7	206	57-9	11-6	12	50-8	7-6	56-3	56	05	48	06	31	07	09	09	57	10	27	11	02	11	42	11	42	
	08	296	33-8	35-8	221	28-5	11-7	12	58-4	7-4	56-3	54	05	48	06	29	07	05	10	03	10	35	11	11	11	52	11	52	
	09	311	33-9	34-9	235	59-2	11-7	13	05-8	7-4	56-3	52	05	48	06	27	07	01	10	09	10	42	11	18	12	01	12	01	
	10	326	34-0	34-0	250	29-9	11-7	13	13-2	7-3	56-2	50	05	48	06	25	06	58	10	14	10	48	11	26	12	08	12	08	
	11	341	34-0	33-1	265	00-6	11-7	13	20-5	7-3	56-2	45	05	47	06	20	06	50	10	25	11	01	11	41	12	24	12	24	
	12	356	34-1	S 10	32-2	279	31-3	11-6	N 13	27-8	7-1	56-2	N 40	05	45	06	16	06	44	10	34	11	12	11	54	12	38	12	38
	13	11	34-2	31-3	294	01-9	11-8	13	34-9	7-1	56-1	35	05	43	06	13	06	39	10	42	11	22	12	04	12	49	12	49	
	14	26	34-3	30-4	308	32-7	11-7	13	42-0	7-0	56-1	30	05	42	06	09	06	34	10	49	11	30	12	14	12	59	12	59	
	15	41	34-3	29-5	323	03-4	11-7	13	49-0	6-9	56-1	20	05	37	06	03	06	25	11	01	11	45	12	30	13	01	13	16	
	16	56	34-4	28-6	337	34-1	11-7	13	55-9	6-9	56-0	N 10	05	32	05	56	06	17	11	11	11	57	12	44	13	31	13	31	
	17	71	34-5	27-7	352	04-8	11-7	14	02-8	6-8	56-0	0	05	25	05	49	06	10	11	21	12	09	12	58	13	46	13	46	
	18	86	34-6	S 10	26-8	6	35-5	11-8	N 14	09-6	6-7	56-0	S 10	05	16	05	41	06	03	11	31	12	22	13	11	14	00	14	00
	19	101	34-6	25-9	21	06-3	11-7	14	16-3	6-6	55-9	20	05	06	05	32	05	55	11	42	12	34	13	26	14	15	14	15	
	20	116	34-7	25-0	35	37-0	11-7	14	22-9	6-5	55-9	30	04	52	05	21	05	46	11	54	12	49	13	42	14	32	14	32	
	21	131	34-8	24-1	50	07-7	11-8	14	29-4	6-5	55-9	35	04	43	05	14	05	40	12	01	12	58	13	51	14	42	14	42	
	22	146	34-9	23-2	64	38-5	11-7	14	35-9	6-4	55-9	40	04	32	05	06	05	34	12	09	13	07	14	02	14	54	14	54	
	23	161	34-9	22-3	79	09-2	11-8	14	42-3	6-3	55-8	45	04	19	04	56	05	27	12	19	13	19	14	15	15	07	15	07	
WEDNESDAY	22	00	176	35-0	S 10	21-3	93	40-0	11-8	N 14	48-6	6-2	55-8	S 50	04	02	04	44	05	18	12	30	13	33	14	31	15	24	
	01	191	35-1	20-4	108	10-8	11-7	14	54-8	6-2	55-8	52	03	53	04	38	05	14	12	35	13	39	14	38	15	31	15	31	
	02	206	35-2	19-5	122	41-5	11-8	15	01-0	6-1	55-7	54	03	43	04	32	05	10	12	41	13	47	14	47	15	40	15	40	
	03	221	35-2	18-6	137	12-3	11-8	15	07-1	5-9	55-7	56	03	32	04	24	05	05	12	48	13	55	14	56	15	50	15	50	
	04	236	35-3	17-7	151	43-1	11-8	15	13-0	6-0	55-7	58	03	19	04	16	04	59	12	56	14	04	15	15	06	16	01	16	01
	05	251	35-4	16-8	166	13-9	11-8	15	19-0	5-8	55-6	S 60	03	03	04	06	04	53	13	04	14	14	15	18	16	14	16	14	
	06	266	35-5	S 10	15-9	180	44-7	11-8	N 15	24-8	5-7	55-6	Lat.	Sun-set	Twilight		Moonset												
	07	281	35-6	15-0	195	15-5	11-8	15	30-5	5-7	55-6	56			Civil	Naut.	21	22	23	24									
	08	296	35-6	14-1	209	46-3	11-8	15	36-2	5-6	55-6	60																	
	09	311	35-7	13-2	224	17-1	11-8	15	41-8	5-5	55-5	N 72	16	13	17	27	18	45	01	46	03	36	05	32	□				
	10	326	35-8	12-2	238	47-9	11-8	15	47-3	5-4	55-5	N 70	16	28	17	33	18	43	01	24	03	01	04	32	05	52	05	52	
	11	341	35-9	11-3	253	18-7	11-8	15	52-7	5-4	55-5	68	16	39	17	37	18	42	01	07	02	36	03	58	05	08	05	08	
	12	356	36-0	S 10	10-4	267	49-5	11-8	N 15	58-1	5-2	55-4	66	16	48	17	42	18	41	00	54	02	17	03	33	04	39	04	39
	13	11	36-0	09-5	282	20-3	11-8	16	03-3	5-2	55-4	64	16	56	17	45	18	41	00	42	02	01	03	14	04	17	04	17	
	14	26	36-1	08-6	296	51-1	11-8	16	08-5	5-1	55-4	62	17	03	17	49	18	40	00	33	01	49	02	59	04	00	04	00	
	15	41	36-2	07-7	311	21-9	11-9	16	13-6	5-0	55-4	60	17	09	17	52	18	40	00	24	01	38	02	45	03	45	03	45	
	16	56	36-3	06-8	325	52-8	11-8	16	18-6	4-9	55-3	N 58	17	14	17	54	18	40	00	17	01	28	02	34	03	33	03	33	
	17	71	36-4	05-9	340	23-6	11-8	16	23-5	4-9	55-3	56	17	19	17	57	18	40	00	11	01	20	02	24	03	22	03	22	
	18	86	36-4	S 10	05-0	9	25-3	11-8	16	33-1	4-7	55-3	54	17	23	17	59	18	40	00	05	01	13	02	16	03	13	03	13
	19	101	36-5	04-0	23	56-1	11-8	16	37-8	4-6	55-2	52	17	27	18	01	18	40	00	00	01	06	02	08	03	04	03	04	
	20	116	36-6	03-1	38	26-9	11-9	16	42-4	4-5	55-2	50	17	30	18	03	18	40	25	01	01	01	02	01	02	01	02	57	
	21	131	36-7	02-2	52	57-8	11-8	16	46-9	4-4	55-2	45	17	37	18	07	18	41	24	48	00	48	01	46	02	40	02	40	
	22	146	36-8	01-3	67	28-6	11-9	16	51-3	4-3	55-1	N 40	17	44	18	11	18	43	24	37	00	37	01	34	02	27	02	27	
	23	161	36-9	10 00-4	96	30-3	11-9	16	59-9	4-2	55-1	35	17	49	18	15	18	44	24	28	00	28	01	24	02	16	02	16	
THURSDAY	23	00	176	36-9	S 9	59-5	81	59-5	11-8	N 16	55-6	4-3	55-1	30	17	54	18	18	46	24	21	00	21	01	15	02	06	02	06
	01	191	37-0	58-6	111	01-2	11-8	17	04-1	4-1	55-1	20	18	02	18	25	18	50	24	07	00	07	00	59	01	49	01	49	
	02	206	37-1	57-6	125	32-0	11-9	17	08-2	4-0	55-1																		

		ARIES		VENUS -4.3		MARS +0.2		JUPITER -1.5		SATURN +0.9		STARS										
G.M.T.		G.H.A.		G.H.A. Dec.		G.H.A. Dec.		G.H.A. Dec.		G.H.A. Dec.		Name	S.H.A.	Dec.								
d	h	°	'	°	'	°	'	°	'	°	'		°	'								
F R I D A Y	2400	153	37.8	137	34.3 N10	52.3	61	35.0 N26	33.3	215	20.3 S21	05.1	215	56.8 S20	57.4	Acamar	315	48.5	S	40	28.0	
	01	168	40.3	152	35.2	53.3	76	37.0	33.3	230	22.2	05.0	230	59.0	57.3	Achernar	335	56.6	S	57	26.4	
	02	183	42.7	167	36.1	54.3	91	38.9	33.2	245	24.1	04.9	246	01.2	57.3	Acrux	173	52.8	S	62	52.9	
	03	198	45.2	182	37.0	55.3	106	40.8	33.1	260	26.1	04.8	261	03.4	57.2	Adhara	255	43.3	S	28	55.4	
	04	213	47.7	197	37.9	56.3	121	42.7	33.1	275	28.0	04.8	276	05.6	57.2	Aldebaran	291	34.7	N	16	25.8	
	05	228	50.1	212	38.9	57.3	136	44.6	33.0	290	29.9	04.7	291	07.8	57.2							
	06	243	52.6	227	39.8 N10	58.3	151	46.5 N26	33.0	305	31.8 S21	04.6	306	10.0 S20	57.1	Alioth	166	55.0	N	56	10.1	
	07	258	55.0	242	40.7	10	59.4	166	48.4	32.9	320	33.7	04.5	321	12.2	57.1	Alkaid	153	29.8	N	49	30.2
	08	273	57.5	257	41.6	11	00.4	181	50.4	32.8	335	35.7	04.4	336	14.4	57.0	Al Na'ir	28	33.8	S	47	09.9
	09	289	00.0	272	42.6	00	01.4	196	52.3	32.8	350	37.6	04.3	351	16.6	57.0	Alnilam	276	26.4	S	1	13.8
	10	304	02.4	287	43.5	02.4	211	54.2	32.7	5	39.5	04.2	6	18.8	56.9	Alphard	218	34.6	S	8	29.5	
	11	319	04.9	302	44.4	03.4	226	56.1	32.6	20	41.4	04.1	21	21.0	56.9							
	12	334	07.4	317	45.4 N11	04.4	241	58.0 N26	32.6	35	43.4 S21	04.0	36	23.2 S20	56.9	Alphecca	126	44.4	N	26	50.5	
	13	349	09.8	332	46.3	05.4	256	59.9	32.5	50	45.3	03.9	51	25.4	56.8	Alpheratz	358	24.7	N	28	52.5	
	14	4	12.3	347	47.2	06.4	272	01.8	32.4	65	47.2	03.8	66	27.6	56.8	Altair	62	47.0	N	8	45.8	
	15	19	14.8	2	48.2	07	287	03.7	32.4	80	49.1	03.7	81	29.8	56.7	Ankaa	353	55.1	S	42	31.2	
	16	34	17.2	17	49.1	08.4	302	05.6	32.3	95	51.0	03.6	96	32.0	56.7	Antares	113	14.8	S	26	20.7	
	17	49	19.7	32	50.1	09.4	317	07.5	32.3	110	53.0	03.6	111	34.3	56.6							
	18	64	22.2	47	51.0 N11	10.4	332	09.4 N26	32.2	125	54.9 S21	03.5	126	36.5 S20	56.6	Arcturus	146	31.6	N	19	22.9	
	19	79	24.6	62	52.0	11.4	347	11.3	32.1	140	56.8	03.4	141	38.7	56.5	Atria	108	52.2	S	68	57.1	
	20	94	27.1	77	52.9	12.4	2	13.2	32.1	155	58.7	03.3	156	40.9	56.5	Avior	234	33.6	S	59	23.3	
	21	109	29.5	92	53.9	00	13.4	17	15.1	32.0	171	00.7	03.2	171	43.1	56.5	Bellatrix	279	14.3	N	6	18.7
	22	124	32.0	107	54.8	14.4	32	17.0	31.9	186	02.6	03.1	186	45.3	56.4	Betelgeuse	271	44.0	N	7	23.8	
23	139	34.5	122	55.8	15.4	47	18.9	31.9	201	04.5	03.0	201	47.5	56.4								
S A T U R D A Y	2500	154	36.9	137	56.7 N11	16.4	62	20.8 N26	31.8	216	06.4 S21	02.9	216	49.7 S20	56.3	Canopus	264	13.4	S	52	40.8	
	01	169	39.4	152	57.7	17.4	77	22.7	31.7	231	08.4	02.8	231	51.9	56.3	Capella	281	32.7	N	45	57.6	
	02	184	41.9	167	58.6	18.4	92	24.6	31.7	246	10.3	02.7	246	54.1	56.2	Deneb	49	58.8	N	45	08.3	
	03	199	44.3	182	59.6	00	19.4	107	26.5	31.6	261	12.2	02.6	261	56.3	56.2	Denebola	183	13.7	N	14	47.2
	04	214	46.8	198	00.6	20.4	122	28.4	31.6	276	14.1	02.5	276	58.5	56.2	Diphda	349	35.8	S	18	12.2	
	05	229	49.3	213	01.5	21.4	137	30.2	31.5	291	16.0	02.4	292	00.7	56.1							
	06	244	51.7	228	02.5 N11	22.4	152	32.1 N26	31.4	306	18.0 S21	02.3	307	02.9 S20	56.1	Dubhe	194	39.5	N	61	57.6	
	07	259	54.2	243	03.5	23.4	167	34.0	31.4	321	19.9	02.3	322	05.1	56.0	Elmath	279	02.5	N	28	34.5	
	08	274	56.7	258	04.4	24.4	182	35.9	31.3	336	21.8	02.2	337	07.3	56.0	Eltanin	91	04.7	N	51	29.4	
	09	289	59.1	273	05.4	00	25.4	197	37.8	31.2	351	23.7	02.1	352	09.5	55.9	Enif	34	26.2	N	9	41.7
	10	305	01.6	288	06.4	26.4	212	39.7	31.2	6	25.7	02.0	7	11.7	55.9	Fomalhaut	16	07.9	S	29	49.8	
	11	320	04.0	303	07.3	27.3	227	41.6	31.1	21	27.6	01.9	22	13.9	55.8							
	12	335	06.5	318	08.3 N11	28.3	242	43.4 N26	31.0	36	29.5 S21	01.8	37	16.1 S20	55.8	Gacrux	172	44.4	S	56	53.6	
	13	350	09.0	333	09.3	29.3	257	45.3	31.0	51	31.4	01.7	52	18.3	55.8	Gienah	176	32.7	S	17	19.6	
	14	5	11.4	348	10.3	30.3	272	47.2	30.9	66	33.4	01.6	67	20.5	55.7	Hamal	149	43.6	S	60	10.9	
	15	20	13.9	3	11.3	31.3	287	49.1	30.9	81	35.3	01.5	82	22.7	55.7	Hamal	328	45.6	N	23	16.7	
	16	35	16.4	18	12.2	32.3	302	51.0	30.8	96	37.2	01.4	97	24.9	55.6	Kaus Aust.	84	36.4	S	34	24.1	
	17	50	18.8	33	13.2	33.3	317	52.8	30.7	111	39.1	01.3	112	27.1	55.6							
	18	65	21.3	48	14.2 N11	34.2	332	54.7 N26	30.7	126	41.1 S21	01.2	127	29.3 S20	55.5	Kochab	137	18.0	N	74	18.7	
	19	80	23.8	63	15.2	35.2	347	56.6	30.6	141	43.0	01.1	142	31.5	55.5	Markab	14	18.0	N	14	59.6	
	20	95	26.2	78	16.2	36.2	2	58.5	30.5	156	44.9	01.1	157	33.7	55.5	Menkar	314	56.5	N	3	56.1	
	21	110	28.7	93	17.2	37.2	18	00.3	30.5	171	46.8	01.0	172	35.9	55.4	Menkent	148	54.0	S	36	10.6	
	22	125	31.2	108	18.2	38.2	33	02.2	30.4	186	48.8	00.9	187	38.1	55.4	Miaplacidus	221	47.1	S	69	33.6	
23	140	33.6	123	19.2	39.1	48	04.1	30.3	201	50.7	00.8	202	40.3	55.3								
S U N D A Y	2600	155	36.1	138	20.2 N11	40.1	63	05.9 N26	30.3	216	52.6 S21	00.7	217	42.5 S20	55.3	Mirfak	309	37.1	N	49	43.5	
	01	170	38.5	153	21.2	41.1	78	07.8	30.2	231	54.5	00.6	232	44.7	55.2	Nunki	76	47.5	S	26	20.7	
	02	185	41.0	168	22.2	42.1	93	09.7	30.1	246	56.5	00.5	247	46.9	55.2	Pecock	54	22.0	S	56	51.5	
	03	200	43.5	183	23.2	43.1	108	11.5	30.1	261	58.4	00.4	262	49.1	55.2	Pollux	244	15.8	N	28	07.2	
	04	215	45.9	198	24.2	44.0	123	13.4	30.0	277	00.3	00.3	277	51.3	55.1	Procyon	245	40.8	N	5	19.3	
	05	230	48.4	213	25.2	45.0	138	15.3	30.0	292	02.2	00.2	292	53.5	55.1							
	06	245	50.9	228	26.2 N11	46.0	153	17.1 N26	29.9	307	04.2 S21	00.1	307	55.8 S20	55.0	Rasalhague	96	43.2	N	12	35.2	
	07	260	53.3	243	27.2	47.0	168	19.0	29.8	322	06.1	21	00.0	322	58.0	55.0	Regulus	208	25.2	N	12	09.3
	08	275	55.8	258	28.2	47.9	183	20.9	29.8	337	08.0	20	59.9	338	00.2	54.9	Rigel	281	50.0	S	8	15.0
	09	290	58.3	273	29.2	00	48.9	198	22.7	29.7	352	10.0	59.8	353	02.4	54.9	Rigel Kent.	140	45.4	S	60	40.2
	10	306	00.7	288	30.3	49.9	213	24.6	29.6	7	11.9	59.8	8	04.6	54.9	Sabik	102	58.0	S	15	40.6	
	11	321	03.2	303	31.3	50.8	228	26.5	29.6	22	13.8	59.7	23	06.8	54.8							
	12	336	05.6	318	32.3 N11	51.8	243	28.3 N26	29.5	37	15.7 S20	59.6	38	09.0 S20	54.8	Schedar	350	26.0	N	56	19.5	
	13	351	08.1	333	33.3	52.8	258	30.2	29.4	52	17.7	59.5	53	11.2	54.7	Shaula	97	15.7	S	37	04.4	
	14	6	10.6	348	34.3	53.8	273	32.0	29.4	67	19.6	59.4	68	13.4	54.7	Sirius	259	08.4	S	16	40.0	
	15	21	13.0	3	35.4	54.7	288	33.9	29.3	82	21.5	59.3	83	15.6	54.6	Spica	159	12.7	S	10	57.5	
	16	36	15.5	18	36.4	55.7	303	35.7	29.2	97	23.5	59.2	98	17.8	54.6	Suhail	223	21.1	S	43	16.7	
	17	51	18.0	33	37.4	56.7	318	37.6	29.2	112	25.4	59.1	113	20.0	54.6							
	18	66	20.4	48	38.5 N11	57.6	333	39.4 N26	29.1	127	27.3 S20	59.0	128	22.2 S20	54.5	Vega	81	05.9	N	38	44.7	
	19	81	22.9	63	39.5	58.6	348	41.3	29.0	142	29.2	58.9	143	24.4	54.5	Zuben'ubi	137	49.1	S	15	52.8	
	20	96	25.4	78	40.5	11	59.6	3	43.1	29.0	157	31.2	58.8	158	26.6	54.4						
	21																					

G.M.T.	SUN		MOON					Lat.	Twilight		Sun-rise	Moonrise				
	G.H.A.		Dec.	P.	d	H.P.	Naut.		Civil	24		25	26	27		
	°	'														
24	00	176 39.0 S	9 37.4	70 21.0	12.0	N 18 14.1	2.1	54.6	N 72	05 31	06 48	07 59	□	□	09 35	11 43
F R I D A Y	01	191 39.1	36.5	84 52.0	11.9	N 18 16.2	2.1	54.6	N 70	05 33	06 44	07 47	09 11	09 54	11 04	12 28
	02	206 39.2	35.6	99 22.9	12.0	N 18 18.3	2.0	54.6	68	05 36	06 40	07 37	09 55	10 40	11 43	12 57
	03	221 39.3	34.7	113 53.9	12.0	N 18 20.3	2.0	54.6	66	05 37	06 36	07 29	10 24	11 11	12 10	13 19
	04	236 39.4	33.8	128 24.9	11.9	N 18 22.3	1.8	54.5	64	05 39	06 33	07 22	10 47	11 33	12 30	13 37
	05	251 39.5	32.8	142 55.8	12.0	N 18 24.1	1.8	54.5	62	05 40	06 31	07 16	11 04	11 51	12 47	13 51
	06	266 39.6 S	9 31.9	157 26.8	12.0	N 18 25.9	1.6	54.5	60	05 41	06 29	07 11	11 19	12 06	13 01	14 03
	07	281 39.7	31.0	171 57.8	12.0	N 18 27.5	1.6	54.5	N 58	05 41	06 26	07 06	11 32	12 19	13 13	14 13
	08	296 39.8	30.1	186 28.8	12.0	N 18 29.1	1.5	54.5	56	05 42	06 24	07 02	11 42	12 30	13 23	14 22
	09	311 39.9	29.1	200 59.8	12.0	N 18 30.6	1.4	54.5	54	05 42	06 23	06 58	11 52	12 39	13 32	14 30
	10	326 40.0	28.2	215 30.8	12.0	N 18 32.0	1.3	54.5	52	05 42	06 21	06 55	12 01	12 48	13 41	14 37
S A T U R D A Y	11	341 40.1	27.3	230 01.8	12.0	N 18 33.3	1.2	54.4	50	05 42	06 19	06 52	12 08	12 56	13 48	14 44
	12	356 40.1 S	9 26.4	244 32.8	12.1	N 18 34.5	1.1	54.4	45	05 42	06 16	06 45	12 24	13 12	14 03	14 58
	13	11 40.2	25.4	259 03.9	12.0	N 18 35.6	1.1	54.4	N 40	05 41	06 12	06 40	12 38	13 25	14 16	15 09
	14	26 40.3	24.5	273 34.9	12.0	N 18 36.7	1.0	54.4	35	05 40	06 09	06 35	12 49	13 37	14 27	15 19
	15	41 40.4	23.6	288 05.9	12.1	N 18 37.7	0.8	54.4	30	05 39	06 06	06 31	12 59	13 47	14 36	15 27
	16	56 40.5	22.7	302 37.0	12.0	N 18 38.5	0.8	54.4	20	05 35	06 01	06 23	13 16	14 04	14 53	15 42
	17	71 40.6	21.7	317 08.0	12.1	N 18 39.3	0.7	54.4	N 10	05 30	05 55	06 16	13 31	14 19	15 07	15 55
	18	86 40.7 S	9 20.8	331 39.1	12.1	N 18 40.0	0.6	54.3	0	05 25	05 49	06 10	13 46	14 33	15 20	16 07
	19	101 40.8	19.9	346 10.2	12.1	N 18 40.6	0.6	54.3	S 10	05 17	05 42	06 03	14 00	14 47	15 34	16 19
	20	116 40.9	19.0	360 41.3	12.1	N 18 41.2	0.4	54.3	20	05 07	05 34	05 56	14 15	15 02	15 48	16 32
S U N D A Y	21	131 41.0	18.0	15 12.4	12.1	N 18 41.6	0.3	54.3	30	04 55	05 23	05 48	14 32	15 20	16 04	16 46
	22	146 41.1	17.1	29 43.5	12.1	N 18 41.9	0.3	54.3	35	04 46	05 17	05 43	14 42	15 29	16 14	16 55
	23	161 41.2	16.2	44 14.6	12.1	N 18 42.2	0.2	54.3	40	04 36	05 10	05 38	14 54	15 41	16 24	17 04
	24	176 41.3 S	9 15.3	58 45.7	12.1	N 18 42.4	0.1	54.3	45	04 24	05 01	05 31	15 07	15 55	16 37	17 15
	01	191 41.4	14.3	73 16.8	12.2	N 18 42.5	0.0	54.3	S 50	04 08	04 49	05 23	15 24	16 11	16 52	17 29
	02	206 41.5	13.4	87 48.0	12.1	N 18 42.5	0.1	54.3	52	04 00	04 44	05 20	15 31	16 18	17 00	17 35
	03	221 41.6	12.5	102 19.1	12.2	N 18 42.4	0.2	54.2	54	03 51	04 38	05 16	15 40	16 27	17 08	17 42
	04	236 41.7	11.6	116 50.3	12.1	N 18 42.2	0.2	54.2	56	03 41	04 32	05 12	15 50	16 37	17 16	17 50
	05	251 41.8	10.6	131 21.4	12.2	N 18 42.0	0.4	54.2	58	03 29	04 24	05 07	16 01	16 48	17 26	17 59
	06	266 41.9 S	9 09.7	145 52.6	12.2	N 18 41.6	0.4	54.2	S 60	03 15	04 15	05 01	16 14	17 01	17 38	18 08
S U N D A Y	07	281 42.0	08.8	160 23.8	12.2	N 18 41.2	0.5	54.2	Lat.	Sun-set	Twilight		Moonset			
	08	296 42.1	07.8	174 55.0	12.2	N 18 40.7	0.6	54.2			Civil	Naut.	24	25	26	27
	09	311 42.2	06.9	189 26.2	12.2	N 18 40.1	0.7	54.2	°	h m	h m	h m	h m	h m	h m	h m
	10	326 42.3	06.0	203 57.4	12.3	N 18 39.4	0.8	54.2	N 72	16 29	17 40	18 58	□	□	08 46	08 16
	11	341 42.4	05.1	218 28.7	12.2	N 18 38.6	0.8	54.2	N 70	16 41	17 45	18 55	05 52	06 48	07 17	07 30
	12	356 42.5 S	9 04.1	232 59.9	12.3	N 18 37.8	1.0	54.2	68	16 51	17 48	18 53	05 08	06 02	06 38	07 00
	13	11 42.6	03.2	247 31.2	12.2	N 18 36.8	1.0	54.2	66	16 59	17 51	18 51	04 39	05 32	06 10	06 37
	14	26 42.7	02.3	262 02.4	12.3	N 18 35.8	1.1	54.1	64	17 06	17 54	18 49	04 17	05 09	05 50	06 19
	15	41 42.8	01.3	276 33.7	12.3	N 18 34.7	1.2	54.1	62	17 11	17 57	18 48	04 00	04 51	05 33	06 05
	16	56 42.9	00.04	291 05.0	12.3	N 18 33.5	1.3	54.1	60	17 17	17 59	18 47	03 45	04 36	05 18	05 53
S U N D A Y	17	71 43.0	8 59.5	305 36.3	12.4	N 18 32.2	1.4	54.1	N 58	17 21	18 01	18 46	03 33	04 24	05 06	05 42
	18	86 43.1 S	8 58.5	320 07.7	12.3	N 18 30.8	1.4	54.1	56	17 25	18 03	18 46	03 22	04 13	04 56	05 32
	19	101 43.2	57.6	334 39.0	12.3	N 18 29.4	1.6	54.1	54	17 29	18 05	18 46	03 13	04 03	04 47	05 24
	20	116 43.3	56.7	349 10.3	12.4	N 18 27.8	1.6	54.1	52	17 32	18 06	18 45	03 04	03 55	04 38	05 17
	21	131 43.4	55.8	363 41.7	12.4	N 18 26.2	1.7	54.1	50	17 35	18 08	18 45	02 57	03 47	04 31	05 10
	22	146 43.5	54.8	378 13.1	12.4	N 18 24.5	1.8	54.1	45	17 42	18 11	18 45	02 40	03 30	04 15	04 56
	23	161 43.6	53.9	392 44.5	12.4	N 18 22.7	1.9	54.1	N 40	17 47	18 14	18 46	02 27	03 17	04 02	04 44
	01	176 43.7 S	8 53.0	47 15.9	12.4	N 18 20.8	1.9	54.1	35	17 52	18 17	18 47	02 16	03 05	03 51	04 33
	02	191 43.8	52.0	61 47.3	12.4	N 18 18.9	2.1	54.1	30	17 56	18 20	18 48	02 06	02 55	03 42	04 25
	03	206 43.9	51.1	76 18.7	12.5	N 18 16.8	2.1	54.1	20	18 04	18 26	18 51	01 49	02 38	03 25	04 09
04	221 44.0	50.2	90 50.2	12.4	N 18 14.7	2.2	54.1	N 10	18 10	18 31	18 56	01 35	02 23	03 10	03 56	
05	236 44.1	49.2	105 21.6	12.5	N 18 12.5	2.3	54.1	0	18 16	18 37	19 02	01 21	02 09	02 56	03 43	
S U N D A Y	06	251 44.2	48.3	119 53.1	12.5	N 18 10.2	2.4	54.1	S 10	18 23	18 44	19 09	01 07	01 55	02 42	03 30
	07	266 44.3 S	8 47.4	134 24.6	12.5	N 18 07.8	2.4	54.1	20	18 30	18 52	19 18	00 52	01 39	02 27	03 16
	08	281 44.4	46.4	148 56.1	12.5	N 18 05.4	2.6	54.1	30	18 38	19 02	19 31	00 35	01 22	02 10	03 01
	09	296 44.5	45.5	163 27.6	12.6	N 18 02.8	2.6	54.1	35	18 43	19 08	19 39	00 25	01 12	02 01	02 52
	10	311 44.6	44.6	177 59.2	12.5	N 18 00.2	2.7	54.0	40	18 48	19 16	19 49	00 14	01 00	01 50	02 41
	11	326 44.7	43.6	192 30.7	12.6	N 17 57.5	2.8	54.0	45	18 54	19 25	20 01	00 01	00 47	01 36	02 29
	12	341 44.8	42.7	207 02.3	12.6	N 17 54.7	2.8	54.0	S 50	19 02	19 36	20 17	24 30	00 30	01 20	02 14
	13	356 45.0 S	8 41.8	221 33.9	12.6	N 17 51.9	3.0	54.0	52	19 05	19 41	20 25	24 22	00 22	01 12	02 07
	14	11 45.1	40.8	236 05.5	12.6	N 17 48.9	3.0	54.0	54	19 09	19 47	20 33	24 13	00 13	01 04	02 00
	15	26 45.2	39.9	250 37.1	12.6	N 17 45.9	3.1	54.0	56	19 13	19 53	20 43	24 04	00 04	00 54	01 51
01	41 45.3	39.0	265 08.7	12.7	N											

	ARIES			VENUS -4.3			MARS +0.2			JUPITER -1.5			SATURN +0.9			STARS		
G.M.T.	G.H.A.		Dec.	G.H.A.		Dec.	G.H.A.		Dec.	G.H.A.		Dec.	G.H.A.		Dec.	Name	S.H.A.	Dec.
d h	° ' "	° ' "	° ' "	° ' "	° ' "	° ' "	° ' "	° ' "	° ' "	° ' "	° ' "	° ' "	° ' "	° ' "	° ' "			
MONDAY	27 00	156 35.2	138 44.7 N12	03.4	63 50.5 N26	28.7	217 38.9 S20	58.5	218 35.5 S20	54.3	Acamar	315 48.5	S 40	28.0				
	01	171 37.7	153 45.7	04.4	78 52.4	28.6	232 40.8	58.4	233 37.7	54.2	Achernar	335 56.6	S 57	26.4				
	02	186 40.1	168 46.8	05.3	93 54.2	28.6	247 42.7	58.3	248 39.9	54.2	Acruz	173 52.8	S 62	52.9				
	03	201 42.6	183 47.8	06.3	108 56.1	28.5	262 44.7	58.2	263 42.1	54.1	Adhara	255 43.4	S 28	55.4				
	04	216 45.1	198 48.9	07.2	123 57.9	28.4	277 46.6	58.1	278 44.3	54.1	Aldebaran	291 34.7	N 16	25.8				
	05	231 47.5	213 49.9	08.2	138 59.8	28.4	292 48.5	58.0	293 46.5	54.0								
	06	246 50.0	228 51.0 N12	09.1	154 01.6 N26	28.3	307 50.5 S20	57.9	308 48.7 S20	54.0	Alioth	166 54.9	N 56	10.1				
	07	261 52.5	243 52.0	10.1	169 03.4	28.2	322 52.4	57.8	323 50.9	54.0	Alkaid	153 29.7	N 49	30.2				
	08	276 54.9	258 53.1	11.0	184 05.3	28.2	337 54.3	57.7	338 53.1	53.9	Al Na'ir	28 33.8	S 47	09.0				
	09	291 57.4	273 54.1	12.0	199 07.1	28.1	352 56.3	57.6	353 55.3	53.9	Alnilam	276 26.4	S 1	13.8				
	10	306 59.9	288 55.2	13.0	214 08.9	28.0	7 58.2	57.5	8 57.5	53.8	Alphard	218 34.6	S 8	29.5				
	11	322 02.3	303 56.3	13.9	229 10.8	28.0	23 00.1	57.4	23 59.7	53.8								
	12	337 04.8	318 57.3 N12	14.9	244 12.6 N26	27.9	38 02.1 S20	57.3	39 01.9 S20	53.8	Alphecca	126 44.4	N 26	50.5				
	13	352 07.3	333 58.4	15.8	259 14.5	27.8	53 04.0	57.2	54 04.1	53.7	Alpheratz	358 24.7	N 28	52.5				
	14	7 09.7	348 59.5	16.7	274 16.3	27.8	68 05.9	57.2	69 06.4	53.7	Altair	62 47.0	N 8	45.8				
	15	22 12.2	4 00.5	17.7	289 18.1	27.7	83 07.9	57.1	84 08.6	53.6	Ankaa	353 55.1	S 42	31.2				
	16	37 14.6	19 01.6	18.6	304 19.9	27.6	98 09.8	57.0	99 10.8	53.6	Antares	113 14.8	S 26	20.7				
	17	52 17.1	34 02.7	19.6	319 21.8	27.6	113 11.7	56.9	114 13.0	53.5								
	18	67 19.6	49 03.8 N12	20.5	334 23.6 N26	27.5	128 13.6 S20	56.8	129 15.2 S20	53.5	Arcturus	146 31.6	N 19	22.9				
	19	82 22.0	64 04.8	21.5	349 25.4	27.4	143 15.6	56.7	144 17.4	53.5	Atria	108 52.1	S 68	57.1				
	20	97 24.5	79 05.9	22.4	4 27.3	27.4	158 17.5	56.6	159 19.6	53.4	Avior	234 33.6	S 59	23.3				
	21	112 27.0	94 07.0	23.4	19 29.1	27.3	173 19.4	56.5	174 21.8	53.4	Bellatrix	279 14.3	N 6	18.7				
	22	127 29.4	109 08.1	24.3	34 30.9	27.2	188 21.4	56.4	189 24.0	53.3	Betelgeuse	271 44.0	N 7	23.8				
23	142 31.9	124 09.2	25.2	49 32.7	27.2	203 23.3	56.3	204 26.2	53.3									
TUESDAY	28 00	157 34.4	139 10.3 N12	26.2	64 34.6 N26	27.1	218 25.2 S20	56.2	219 28.4 S20	53.2	Canopus	264 13.4	S 52	40.9				
	01	172 36.8	154 11.4	27.1	79 36.4	27.0	233 27.2	56.1	234 30.7	53.2	Capella	281 32.8	N 45	57.6				
	02	187 39.3	169 12.5	28.1	94 38.2	27.0	248 29.1	56.0	249 32.9	53.2	Deneb	49 58.8	N 45	08.3				
	03	202 41.7	184 13.6	29.0	109 40.0	26.9	263 31.0	55.9	264 35.1	53.1	Denebola	183 13.6	N 14	47.2				
	04	217 44.2	199 14.6	29.9	124 41.8	26.8	278 33.0	55.9	279 37.3	53.1	Diphda	349 35.8	S 18	12.2				
	05	232 46.7	214 15.7	30.9	139 43.7	26.8	293 34.9	55.8	294 39.5	53.0								
	06	247 49.1	229 16.8 N12	31.8	154 45.5 N26	26.7	308 36.8 S20	55.7	309 41.7 S20	53.0	Dubhe	194 39.5	N 61	57.6				
	07	262 51.6	244 18.0	32.7	169 47.3	26.6	323 38.8	55.6	324 43.9	52.9	Elath	279 02.5	N 28	34.5				
	08	277 54.1	259 19.1	33.7	184 49.1	26.6	338 40.7	55.5	339 46.1	52.9	Eltanin	91 04.7	N 51	29.4				
	09	292 56.5	274 20.2	34.6	199 50.9	26.5	353 42.6	55.4	354 48.3	52.9	Enif	34 26.2	N 9	41.7				
	10	307 59.0	289 21.3	35.5	214 52.7	26.4	8 44.6	55.3	9 50.5	52.8	Fomalhaut	16 07.9	S 29	49.8				
	11	323 01.5	304 22.4	36.5	229 54.6	26.4	23 46.5	55.2	24 52.7	52.8								
	12	338 03.9	319 23.5 N12	37.4	244 56.4 N26	26.3	38 48.5 S20	55.1	39 55.0 S20	52.7	Gacrux	172 44.4	S 56	53.6				
	13	353 06.4	334 24.6	38.3	259 58.2	26.2	53 50.4	55.0	54 57.2	52.7	Gienah	176 32.7	S 17	19.6				
	14	8 08.9	349 25.7	39.2	275 00.0	26.2	68 52.3	54.9	69 59.4	52.6	Hadar	149 43.6	S 60	10.9				
	15	23 11.3	4 26.8	40.2	290 01.8	26.1	83 54.3	54.8	85 01.6	52.6	Hamal	328 45.6	N 23	16.7				
	16	38 13.8	19 28.0	41.1	305 03.6	26.0	98 56.2	54.7	100 03.8	52.6	Kaus Aust.	84 36.4	S 34	24.1				
	17	53 16.2	34 29.1	42.0	320 05.4	26.0	113 58.1	54.6	115 06.0	52.5								
	18	68 18.7	49 30.2 N12	42.9	335 07.2 N26	25.9	129 00.1 S20	54.6	130 08.2 S20	52.5	Kochab	137 17.9	N 74	18.7				
	19	83 21.2	64 31.3	43.9	350 09.0	25.8	144 02.0	54.5	145 10.4	52.4	Markab	14 18.0	N 14	59.6				
	20	98 23.6	79 32.5	44.8	5 10.8	25.8	159 03.9	54.4	160 12.6	52.4	Menkar	314 56.5	N 3	56.1				
	21	113 26.1	94 33.6	45.7	20 12.6	25.7	174 05.9	54.3	175 14.8	52.4	Menkent	148 54.0	S 36	10.6				
	22	128 28.6	109 34.7	46.6	35 14.4	25.6	189 07.8	54.2	190 17.1	52.3	Miaplacidus	221 47.1	S 69	33.6				
23	143 31.0	124 35.9	47.6	50 16.2	25.6	204 09.7	54.1	205 19.3	52.3									
WEDNESDAY	00	158 33.5	139 37.0 N12	48.5	65 18.0 N26	25.5	219 11.7 S20	54.0	220 21.5 S20	52.2	Mirfak	309 37.1	N 49	43.5				
	01	173 36.0	154 38.1	49.4	80 19.8	25.4	234 13.6	53.9	235 23.7	52.2	Nunki	76 47.5	S 26	20.7				
	02	188 38.4	169 39.3	50.3	95 21.6	25.3	249 15.6	53.8	250 25.9	52.1	Peacock	54 22.0	S 56	51.5				
	03	203 40.9	184 40.4	51.2	110 23.4	25.3	264 17.5	53.7	265 28.1	52.1	Pollux	244 15.8	N 28	07.2				
	04	218 43.3	199 41.6	52.1	125 25.2	25.2	279 19.4	53.6	280 30.3	52.1	Procyon	245 40.9	N 5	19.3				
	05	233 45.8	214 42.7	53.1	140 27.0	25.1	294 21.4	53.5	295 32.5	52.0								
	06	248 48.3	229 43.9 N12	54.0	155 28.8 N26	25.1	309 23.3 S20	53.4	310 34.7 S20	52.0	Rasalhague	96 43.2	N 12	35.2				
	07	263 50.7	244 45.0	54.9	170 30.6	25.0	324 25.2	53.3	325 37.0	51.9	Regulus	208 25.2	N 12	09.3				
	08	278 53.2	259 46.2	55.8	185 32.4	24.9	339 27.2	53.3	340 39.2	51.9	Rigel	281 50.0	S 8	15.0				
	09	293 55.7	274 47.3	56.7	200 34.2	24.9	354 29.1	53.2	355 41.4	51.8	Rigel Kent.	140 45.4	S 60	40.2				
	10	308 58.1	289 48.5	57.6	215 36.0	24.8	9 31.1	53.1	10 43.6	51.8	Sabik	102 57.9	S 15	40.6				
	11	324 00.6	304 49.7	58.5	230 37.8	24.7	24 33.0	53.0	25 45.8	51.8								
	12	339 03.1	319 50.8 N12	59.4	245 39.6 N26	24.7	39 34.9 S20	52.9	40 48.0 S20	51.7	Schedar	350 26.0	N 56	19.5				
	13	354 05.5	334 52.0 13	00.3	260 41.4	24.6	54 36.9	52.8	55 50.2	51.7	Shaula	97 15.7	S 37	04.4				
	14	9 08.0	349 53.1	01.2	275 43.2	24.5	69 38.8	52.7	70 52.4	51.6	Sirius	259 08.4	S 16	40.0				
	15	24 10.5	4 54.3	02.2	290 44.9	24.5	84 40.8	52.6	85 54.7	51.6	Spica	159 12.7	S 10	57.6				
	16	39 12.9	19 55.5	03.1	305 46.7	24.4	99 42.7	52.5	100 56.9	51.6	Suhail	223 21.1	S 43	16.7				
	17	54 15.4	34 56.7	04.0	320 48.5	24.3	114 44.6	52.4	115 59.1	51.5								
	18	69 17.8	49 57.8 N13	04.9	335 50.3 N26	24.2	129 46.6 S20	52.3	131 01.3 S20	51.5	Vega	81 05.9	N 38	44.6				
	19	84 20.3	64 59.0	05.8	350 52.1	24.2	144 48.5	52.2	146 03.5	51.4	Zuben'ubi	137 49.1	S 15	52.8				
	20	99 22.8	80 00.2	06.7	5 53.9	24.1	159 50.4	52.1	161 05.7	51.4								
	21	114 25.2	95 01.4	07.6	20 55.6	24.0	174 52.4	52.0	176 07.9	51.3		S.H.A.	Mer. Pass.					
	22	129 27.7	110 02.6	08.5	35 57.4	24.0	189 54.3	51.9	191 10.1	51.3	Venus	341 35.9	14	42				
23	144 30.2	125 03.7	09.4	50 59.2	23.9	204 56.3	51.9	206 12.4	51.3	Mars	267 00.2	19	39					
										Jupiter	60 50.8	9	25					
										Saturn	61 54.0	9	21					
Mer. Pass. 13 27.5 v 1.1 d 0.9 v 1.8 d 0.1 v 1.9 d 0.1 v 2.2 d 0.0																		

G.M.T.	SUN		MOON				Lat.	Twilight		Sun-rise	Moonrise						
								Naut.	Civil		27	28	1	2			
	G.H.A.	Dec.	G.H.A.	φ	Dec.	d			H.P.		h	m	h	m	h	m	h
MONDAY	d	h	$^{\circ}$	$'$	$^{\circ}$	$'$	$^{\circ}$	$'$	$^{\circ}$	h	m	h	m	h	m	h	m
	27 00	176 46.2 S 8 30.5	35 54.2 12.8	N 17 11.2	3.9	54.0	N 72	05 16	06 34	07 43	11 43	13 29	15 10	16 49			
	01	191 46.4 29.6	50 26.0 12.8	17 07.3	3.9	54.0	N 70	05 20	06 31	07 33	12 28	13 57	15 28	17 00			
	02	206 46.5 28.6	64 57.8 12.9	17 03.4	4.1	54.0	68	05 24	06 28	07 25	12 57	14 18	15 43	17 09			
	03	221 46.6 .. 27.7	79 29.7 12.9	16 59.3	4.1	54.0	66	05 27	06 26	07 18	13 19	14 35	15 55	17 16			
	04	236 46.7 26.8	94 01.6 12.8	16 55.2	4.2	54.0	64	05 29	06 24	07 12	13 37	14 49	16 04	17 22			
	05	251 46.8 25.8	108 33.4 12.9	16 51.0	4.3	54.0	62	05 31	06 22	07 07	13 51	15 00	16 12	17 27			
	06	266 46.9 S 8 24.9	123 05.3 13.0	N 16 46.7	4.4	54.0	60	05 32	06 20	07 02	14 03	15 10	16 19	17 31			
	07	281 47.0 24.0	137 37.3 12.9	16 42.3	4.4	54.0	N 58	05 33	06 19	06 58	14 13	15 18	16 26	17 35			
	08	296 47.1 23.0	152 09.2 12.9	16 37.9	4.5	54.0	56	05 34	06 17	06 55	14 22	15 25	16 31	17 39			
	09	311 47.2 .. 22.1	166 41.1 13.0	16 33.4	4.6	54.0	54	05 35	06 16	06 52	14 30	15 32	16 36	17 42			
	10	326 47.3 21.1	181 13.1 13.0	16 28.8	4.6	54.0	52	05 36	06 15	06 49	14 37	15 38	16 41	17 45			
	11	341 47.5 20.2	195 45.1 13.0	16 24.2	4.8	54.1	50	05 36	06 13	06 46	14 44	15 43	16 45	17 47			
	12	356 47.6 S 8 19.3	210 17.1 13.0	N 16 19.4	4.8	54.1	45	05 37	06 11	06 40	14 58	15 55	16 53	17 53			
	13	11 47.7 18.3	224 49.1 13.1	16 14.6	4.8	54.1	N 40	05 37	06 08	06 35	15 09	16 04	17 01	17 58			
	14	26 47.8 17.4	239 21.2 13.1	16 09.8	5.0	54.1	35	05 36	06 06	06 31	15 19	16 12	17 07	18 02			
	15	41 47.9 .. 16.4	253 53.3 13.0	16 04.8	5.0	54.1	30	05 36	06 03	06 27	15 27	16 19	17 12	18 05			
	16	56 48.0 15.5	268 25.3 13.2	15 59.8	5.1	54.1	20	05 33	05 59	06 21	15 42	16 32	17 21	18 12			
	17	71 48.1 14.5	282 57.5 13.1	15 54.7	5.2	54.1	N 10	05 29	05 54	06 15	15 55	16 42	17 30	18 17			
	18	86 48.2 S 8 13.6	297 29.6 13.1	N 15 49.5	5.2	54.1	0	05 24	05 48	06 09	16 07	16 53	17 38	18 22			
	19	101 48.4 12.7	312 01.7 13.2	15 44.3	5.3	54.1	S 10	05 18	05 42	06 03	16 19	17 03	17 45	18 27			
	20	116 48.5 11.7	326 33.9 13.2	15 39.0	5.4	54.1	20	05 09	05 35	05 57	16 32	17 13	17 53	18 32			
	21	131 48.6 .. 10.8	341 06.1 13.2	15 33.6	5.5	54.1	30	04 57	05 26	05 50	16 46	17 26	18 03	18 39			
	22	146 48.7 09.8	355 38.3 13.2	15 28.1	5.5	54.1	35	04 49	05 20	05 46	16 55	17 32	18 08	18 42			
	23	161 48.8 08.9	10 10.5 13.2	15 22.6	5.6	54.1	40	04 40	05 13	05 41	17 04	17 40	18 14	18 46			
24						45	04 29	05 05	05 35	17 15	17 50	18 21	18 51				
TUESDAY	28 00	176 48.9 S 8 08.0	24 42.7 13.3	N 15 17.0	5.6	54.1	S 50	04 14	04 55	05 29	17 29	18 01	18 29	18 56			
	01	191 49.0 07.0	39 15.0 13.2	15 11.4	5.8	54.1	52	04 07	04 50	05 25	17 35	18 06	18 33	18 59			
	02	206 49.2 06.1	53 47.2 13.3	15 05.6	5.8	54.1	54	03 59	04 45	05 22	17 42	18 12	18 38	19 01			
	03	221 49.3 .. 05.1	68 19.5 13.3	14 59.8	5.8	54.1	56	03 49	04 39	05 18	17 50	18 18	18 42	19 04			
	04	236 49.4 04.2	82 51.8 13.4	14 54.0	5.9	54.1	58	03 39	04 32	05 14	17 59	18 25	18 48	19 08			
	05	251 49.5 03.2	97 24.2 13.3	14 48.1	6.0	54.1	S 60	03 26	04 24	05 09	18 08	18 33	18 54	19 11			
	06	266 49.6 S 8 02.3	111 56.5 13.4	N 14 42.1	6.1	54.1											
	07	281 49.7 01.3	126 28.9 13.4	14 36.0	6.1	54.1											
	08	296 49.9 8 00.4	141 01.3 13.4	14 29.9	6.2	54.2	Lat.	Sun-set	Twilight		Moonset						
	09	311 50.0 7 59.5	155 33.7 13.4	14 23.7	6.3	54.2			Civil	Naut.	27	28	1	2			
	10	326 50.1 58.5	170 06.1 13.4	14 17.4	6.3	54.2	$^{\circ}$	h	m	h	m	h	m	h	m	h	m
	11	341 50.2 57.6	184 38.5 13.5	14 11.1	6.4	54.2	N 72	16 44	17 54	19 12	08 16	08 05	07 57	07 51			
	12	356 50.3 S 7 56.6	199 11.0 13.5	N 14 04.7	6.5	54.2	N 70	16 54	17 57	19 07	07 30	07 35	07 37	07 38			
	13	11 50.4 55.7	213 43.5 13.5	13 58.2	6.5	54.2	68	17 02	17 59	19 03	07 00	07 13	07 22	07 28			
	14	26 50.6 54.7	228 16.0 13.5	13 51.7	6.6	54.2	66	17 09	18 01	19 00	06 37	06 56	07 09	07 20			
	15	41 50.7 .. 53.8	242 48.5 13.5	13 45.1	6.6	54.2	64	17 15	18 03	18 58	06 19	06 42	06 59	07 13			
	16	56 50.8 52.8	257 21.0 13.6	13 38.5	6.7	54.2	62	17 20	18 05	18 56	06 05	06 30	06 50	07 06			
	17	71 50.9 51.9	271 53.6 13.5	13 31.8	6.8	54.2	60	17 24	18 06	18 54	05 53	06 20	06 42	07 01			
	18	86 51.0 S 7 51.0	286 26.1 13.6	N 13 25.0	6.8	54.2	N 58	17 28	18 08	18 53	05 42	06 11	06 35	06 56			
	19	101 51.2 50.0	300 58.7 13.6	13 18.2	6.9	54.2	56	17 32	18 09	18 52	05 32	06 03	06 29	06 52			
	20	116 51.3 49.1	315 31.3 13.6	13 11.3	7.0	54.2	54	17 35	18 10	18 51	05 24	05 56	06 24	06 48			
	21	131 51.4 .. 48.1	330 03.9 13.7	13 04.3	7.0	54.3	52	17 37	18 11	18 50	05 17	05 50	06 19	06 45			
	22	146 51.5 47.2	344 36.6 13.6	12 57.3	7.0	54.3	50	17 40	18 13	18 50	05 10	05 44	06 14	06 42			
	23	161 51.6 46.2	359 09.2 13.7	12 50.3	7.2	54.3	45	17 46	18 15	18 49	04 56	05 32	06 05	06 35			
	WEDNESDAY	I 00	176 51.8 S 7 45.3	13 41.9 13.7	N 12 43.1	7.2	54.3	N 40	17 50	18 18	18 49	04 44	05 22	05 57	06 29		
01		191 51.9 44.3	28 14.6 13.7	12 35.9	7.2	54.3	35	17 55	18 20	18 49	04 33	05 13	05 50	06 24			
02		206 52.0 43.4	42 47.3 13.7	12 28.7	7.3	54.3	30	17 58	18 22	18 50	04 25	05 05	05 44	06 20			
03		221 52.1 .. 42.4	57 20.0 13.7	12 21.4	7.4	54.3	20	18 05	18 27	18 52	04 09	04 52	05 33	06 12			
04		236 52.2 41.5	71 52.7 13.8	12 14.0	7.4	54.3	N 10	18 10	18 32	18 56	03 56	04 40	05 23	06 05			
05		251 52.4 40.5	86 25.5 13.7	12 06.6	7.4	54.3	0	18 16	18 37	19 01	03 43	04 29	05 14	05 59			
06		266 52.5 S 7 39.6	100 58.2 13.8	N 11 59.2	7.6	54.3	S 10	18 22	18 43	19 07	03 30	04 18	05 05	05 53			
07		281 52.6 38.6	115 31.0 13.8	11 51.6	7.5	54.3	20	18 28	18 50	19 16	03 16	04 06	04 56	05 46			
08		296 52.7 37.7	130 03.8 13.8	11 44.1	7.7	54.4	30	18 35	18 59	19 28	03 01	03 52	04 45	05 38			
09		311 52.8 .. 36.7	144 36.6 13.8	11 36.4	7.7	54.4	35	18 39	19 05	19 35	02 52	03 45	04 38	05 33			
10		326 53.0 35.8	159 09.4 13.8	11 28.7	7.7	54.4	40	18 44	19 11	19 44	02 41	03 35	04 31	05 28			
11		341 53.1 34.8	173 42.2 13.9	11 21.0	7.8	54.4	45	18 49	19 19	19 55	02 29	03 25	04 23	05 22			
12		356 53.2 S 7 33.9	188 15.1 13.9	N 11 13.2	7.8	54.4	S 50	18 56	19 29	20 10	02 14	03 12	04 12	05 15			
13		11 53.3 32.9	202 48.0 13.8	11 05.4	7.9	54.4	52	18 59	19 34	20 17	02 07	03 06	04 08	05 11			
14		26 53.5 32.0	217 20.8 13.9	10 57.5	8.0	54.4	54	19 02	19 39	20 25	02 00	02 59	04 02	05 08			
15		41 53.6 .. 31.0	231 53.7 13.9	10 49.5	8.0	54.4	56	19 06	19 45	20 34	01 51	02 52	03 57	05 03			
16		56 53.7 30.1	246 26.6 14.0	10 41.5	8.0	54.4	58	19 10	19 52	20 44	01 41	02 44	03 50	04 59			
17		71 53.8 29.1	260 59.6 13.9	10 33.5	8.1	54.5	S 60	19 15	19 59	20 57	01 29	02 34	03 42	04 54			
18		86 54.0 S 7 28.2	275 32.5 13.9	N 10 25.4	8.2	54.5											
19		101 54.1 27.2	290 05.4 14.0	10 17.2	8.2	54.5											
20		116 54.2 26.3	304 38.4 13.9	10 09.0	8.2	54.5											
21		131 54.3 .. 25.3	319 11.3 14.0	10 00.8	8.3	54.5											
22																	

		ARIES		VENUS -4.3		MARS +0.3		JUPITER -1.5		SATURN +0.9		STARS		
G.M.T.		G.H.A.	G.H.A.	Dec.	G.H.A.	Dec.	G.H.A.	Dec.	G.H.A.	Dec.	Name	S.H.A.	Dec.	
d	h													
2	00	159 32.6	140 04.9	N13 10.3	66 01.0	N26 23.8	219 58.2	S20 51.8	221 14.6	S20 51.2	Acamar	315 48.5	S 40 28.0	
	01	174 35.1	155 06.1	11.2	81 02.8	23.8	235 00.2	51.7	236 16.8	51.2	Achernar	335 56.6	S 57 26.3	
	02	189 37.6	170 07.3	12.1	96 04.5	23.7	250 02.1	51.6	251 19.0	51.1	Acrux	173 52.8	S 62 52.9	
	03	204 40.0	185 08.5	.. 12.9	111 06.3	.. 23.6	265 04.0	.. 51.5	266 21.2	.. 51.1	Adhara	255 43.4	S 28 55.4	
	04	219 42.5	200 09.7	13.8	126 08.1	23.5	280 06.0	51.4	281 23.4	51.1	Aldebaran	291 34.8	N 16 25.8	
05	234 45.0	215 10.9	14.7	141 09.9	23.5	295 07.9	51.3	296 25.6	51.0					
T H U R S D A Y	06	249 47.4	230 12.1	N13 15.6	156 11.6	N26 23.4	310 09.9	S20 51.2	311 27.9	S20 51.0	Alioth	166 54.9	N 56 10.1	
	07	264 49.9	245 13.3	16.5	171 13.4	23.3	325 11.8	51.1	326 30.1	50.9	Alkaid	153 29.7	N 49 30.2	
	08	279 52.3	260 14.5	17.4	186 15.2	23.3	340 13.7	51.0	341 32.3	50.9	Al Na'ir	28 33.8	S 47 09.9	
	09	294 54.8	275 15.7	.. 18.3	201 16.9	.. 23.2	355 15.7	.. 50.9	356 34.5	.. 50.8	Alnilam	276 26.4	S 1 13.8	
	10	309 57.3	290 16.9	19.2	216 18.7	23.1	10 17.6	50.8	11 36.7	50.8	Alphard	218 34.6	S 8 29.6	
	11	324 59.7	305 18.1	20.1	231 20.5	23.1	25 19.6	50.7	26 38.9	50.8				
	12	340 02.2	320 19.3	N13 20.9	246 22.3	N26 23.0	40 21.5	S20 50.7	41 41.2	S20 50.7	Alphecca	126 44.4	N 26 50.5	
	13	355 04.7	335 20.6	21.8	261 24.0	22.9	55 23.4	50.6	56 43.4	50.7	Alpheratz	358 24.7	N 28 52.5	
	14	10 07.1	350 21.8	22.7	276 25.8	22.8	70 25.4	50.5	71 45.6	50.6	Altair	62 47.0	N 8 45.8	
	15	25 09.6	5 23.0	.. 23.6	291 27.6	.. 22.8	85 27.3	.. 50.4	86 47.8	.. 50.6	Ankaa	353 55.1	S 42 31.2	
16	40 12.1	20 24.2	24.5	306 29.3	22.7	100 29.3	50.3	101 50.0	50.6	Antares	113 14.7	S 26 20.7		
17	55 14.5	35 25.4	25.4	321 31.1	22.6	115 31.2	50.2	116 52.2	50.5					
18	70 17.0	50 26.7	N13 26.2	336 32.8	N26 22.6	130 33.2	S20 50.1	131 54.4	S20 50.5	Arcturus	146 31.6	N 19 22.9		
19	85 19.5	65 27.9	27.1	351 34.6	22.5	145 35.1	50.0	146 56.7	50.4	Atria	108 52.1	S 68 57.2		
20	100 21.9	80 29.1	28.0	6 36.4	22.4	160 37.0	49.9	161 58.9	50.4	Avior	234 33.6	S 59 23.3		
21	115 24.4	95 30.4	.. 28.9	21 38.1	.. 22.3	175 39.0	.. 49.8	177 01.1	.. 50.3	Bellatrix	279 14.4	N 6 18.7		
22	130 26.8	110 31.6	29.8	36 39.9	22.3	190 40.9	49.7	192 03.3	50.3	Betelgeuse	271 44.0	N 7 23.9		
23	145 29.3	125 32.8	30.6	51 41.6	22.2	205 42.9	49.6	207 05.5	50.3					
3	00	160 31.8	140 34.1	N13 31.5	66 43.4	N26 22.1	220 44.8	S20 49.5	222 07.7	S20 50.2	Canopus	264 13.5	S 52 40.9	
	01	175 34.2	155 35.3	32.4	81 45.2	22.1	235 46.8	49.4	237 10.0	50.2	Capella	281 32.8	N 45 57.6	
	02	190 36.7	170 36.6	33.2	96 46.9	22.0	250 48.7	49.4	252 12.2	50.1	Deneb	49 58.8	N 45 08.3	
	03	205 39.2	185 37.8	.. 34.1	111 48.7	.. 21.9	265 50.6	.. 49.3	267 14.4	.. 50.1	Denebola	183 13.6	N 14 47.2	
	04	220 41.6	200 39.1	35.0	126 50.4	21.8	280 52.6	49.2	282 16.6	50.1	Diphda	349 35.8	S 18 12.2	
05	235 44.1	215 40.3	35.9	141 52.2	21.8	295 54.5	49.1	297 18.8	50.0					
06	250 46.6	230 41.6	N13 36.7	156 53.9	N26 21.7	310 56.5	S20 49.0	312 21.0	S20 50.0	Dubhe	194 39.5	N 61 57.6		
07	265 49.0	245 42.8	37.6	171 55.7	21.6	325 58.4	48.9	327 23.3	49.9	Elmath	279 02.5	N 28 34.5		
08	280 51.5	260 44.1	38.5	186 57.4	21.6	341 00.4	48.8	342 25.5	49.9	Eltanin	91 04.7	N 51 29.4		
09	295 53.9	275 45.3	.. 39.3	201 59.2	.. 21.5	356 02.3	.. 48.7	357 27.7	.. 49.8	Enif	34 26.2	N 9 41.1		
10	310 56.4	290 46.6	40.2	217 00.9	21.4	11 04.3	48.6	12 29.9	49.8	Fomalhaut	16 07.9	S 29 49.8		
11	325 58.9	305 47.9	41.1	232 02.7	21.3	26 06.2	48.5	27 32.1	49.8					
12	341 01.3	320 49.1	N13 41.9	247 04.4	N26 21.3	41 08.1	S20 48.4	42 34.3	S20 49.7	Gacrux	172 44.4	S 56 53.7		
13	356 03.8	335 50.4	42.8	262 06.2	21.2	56 10.1	48.3	57 36.6	49.7	Gienah	176 32.7	S 17 19.6		
14	11 06.3	350 51.7	43.6	277 07.9	21.1	71 12.0	48.2	72 38.8	49.6	Hadar	149 43.6	S 60 10.9		
15	26 08.7	5 53.0	.. 44.5	292 09.7	.. 21.1	86 14.0	.. 48.2	87 41.0	.. 49.6	Hamal	328 45.6	N 23 16.7		
16	41 11.2	20 54.2	45.4	307 11.4	21.0	101 15.9	48.1	102 43.2	49.6	Kaus Aust.	84 36.4	S 34 24.1		
17	56 13.7	35 55.5	46.2	322 13.2	20.9	116 17.9	48.0	117 45.4	49.5					
18	71 16.1	50 56.8	N13 47.1	337 14.9	N26 20.8	131 19.8	S20 47.9	132 47.6	S20 49.5	Kochab	137 17.9	N 74 18.7		
19	86 18.6	65 58.1	47.9	352 16.6	20.8	146 21.8	47.8	147 49.9	49.4	Markab	14 18.0	N 14 59.6		
20	101 21.1	80 59.4	48.8	7 18.4	20.7	161 23.7	47.7	162 52.1	49.4	Menkar	314 56.5	N 3 56.1		
21	116 23.5	96 00.7	.. 49.6	22 20.1	.. 20.6	176 25.7	.. 47.6	177 54.3	.. 49.3	Menkent	148 53.9	S 36 10.6		
22	131 26.0	111 01.9	50.5	37 21.9	20.6	191 27.6	47.5	192 56.5	49.3	Miaplacidus	221 47.2	S 69 33.6		
23	146 28.4	126 03.2	51.3	52 23.6	20.5	206 29.6	47.4	207 58.7	49.3					
4	00	161 30.9	141 04.5	N13 52.2	67 25.3	N26 20.4	221 31.5	S20 47.3	223 01.0	S20 49.2	Mirfak	309 37.1	N 49 43.1	
	01	176 33.4	156 05.8	53.0	82 27.1	20.3	236 33.5	47.2	238 03.2	49.2	Nunki	76 47.5	S 26 20.7	
	02	191 35.8	171 07.1	53.9	97 28.8	20.3	251 35.4	47.1	253 05.4	49.1	Peacock	54 21.9	S 56 51.5	
	03	206 38.3	186 08.4	.. 54.7	112 30.5	.. 20.2	266 37.4	.. 47.0	268 07.6	.. 49.1	Pollux	244 15.8	N 28 07.2	
	04	221 40.8	201 09.7	55.6	127 32.3	20.1	281 39.3	46.9	283 09.8	49.1	Procyon	245 40.9	N 5 19.3	
05	236 43.2	216 11.0	56.4	142 34.0	20.0	296 41.2	46.9	298 12.0	49.0					
06	251 45.7	231 12.3	N13 57.3	157 35.7	N26 20.0	311 43.2	S20 46.8	313 14.3	S20 49.0	Rasalhague	96 43.2	N 12 35.2		
07	266 48.2	246 13.7	58.1	172 37.5	19.9	326 45.1	46.7	328 16.5	48.9	Regulus	208 25.2	N 12 09.3		
08	281 50.6	261 15.0	58.9	187 39.2	19.8	341 47.1	46.6	343 18.7	48.9	Rigel	281 50.0	S 8 15.0		
09	296 53.1	276 16.3	13 59.8	202 40.9	.. 19.7	356 49.0	.. 46.5	358 20.9	.. 48.8	Rigel Kent.	140 45.4	S 60 40.2		
10	311 55.5	291 17.6	14 00.6	217 42.6	19.7	11 51.0	46.4	13 23.1	48.8	Sabik	102 57.9	S 15 40.6		
11	326 58.0	306 18.9	01.5	232 44.4	19.6	26 52.9	46.3	28 25.4	48.8					
12	342 00.5	321 20.2	N14 02.3	247 46.1	N26 19.5	41 54.9	S20 46.2	43 27.6	S20 48.7	Schedar	350 26.1	N 56 19.5		
13	357 02.9	336 21.6	03.1	262 47.8	19.5	56 56.8	46.1	58 29.8	48.7	Shaula	97 15.7	S 37 04.4		
14	12 05.4	351 22.9	04.0	277 49.5	19.4	71 58.8	46.0	73 32.0	48.6	Sirius	259 08.4	S 16 40.0		
15	27 07.9	6 24.2	.. 04.8	292 51.3	.. 19.3	87 00.7	.. 45.9	88 34.3	.. 48.6	Spica	159 12.7	S 10 57.6		
16	42 10.3	21 25.6	05.6	307 53.0	19.2	102 02.7	45.8	103 36.5	48.6	Suhail	223 21.1	S 43 16.7		
17	57 12.8	36 26.9	06.5	322 54.7	19.2	117 04.6	45.7	118 38.7	48.5					
18	72 15.3	51 28.2	N14 07.3	337 56.4	N26 19.1	132 06.6	S20 45.6	133 40.9	S20 48.5	Vega	81 05.9	N 38 44.6		
19	87 17.7	66 29.6	08.1	352 58.2	19.0	147 08.5	45.6	148 43.1	48.4	Zuben'ubi	137 49.1	S 15 52.8		
20	102 20.2	81 30.9	09.0	7 59.9	18.9	162 10.5	45.5	163 45.4	48.4					
21	117 22.7	96 32.3	.. 09.8	23 01.6	.. 18.9	177 12.4	.. 45.4	178 47.6	.. 48.4	S.H.A.		Mer. Pass.		
22	132 25.1	111 33.6	10.6	38 03.3	18.8	192 14.4	45.3	193 49.8	48.3	Venus	340 02.3	14 36		
23	147 27.6	126 34.9	11.5	53 05.0	18.7	207 16.3	45.2	208 52.0	48.3	Mars	266 11.6	19 31		
Mer. Pass. 13 15.7		<i>v</i>	1.3	<i>d</i> 0.9	<i>v</i>	1.7	<i>d</i> 0.1	<i>v</i> 1.9	<i>d</i> 0.1	<i>v</i> 2.2	<i>d</i> 0.0	Jupiter	60 13.0	9 16
												Saturn	61 35.9	9 10

G.M.T.	SUN			MOON				Lat.	Twilight		Sun-rise	Moonrise										
	G.H.A.		Dec.	G.H.A.	°	Dec.	d		H.P.	Naut.		Civil	2	3	4	5						
	°	'															°	'	°	'	°	'
T H U R S D A Y	2 00	176	54-7	S	7	22-5	2	50-3	14-0	N	9	35-8	8-5	54-5	N 72	05 01	06 19	07 27	16 49	18 28	20 07	21 48
	01	191	54-8				17	23-3	14-0		9	27-3	8-4	54-6	N 70	05 07	06 17	07 19	17 00	18 32	20 05	21 40
	02	206	55-0				31	56-3	14-1		9	18-9	8-5	54-6	68	05 12	06 16	07 12	17 09	18 35	20 03	21 33
	03	221	55-1	..	19-6		46	29-4	14-0		9	10-4	8-6	54-6	64	05 19	06 14	07 01	17 22	18 41	20 01	21 23
	04	236	55-2		18-7		61	02-4	14-1		9	01-8	8-6	54-6	62	05 22	06 13	06 57	17 27	18 43	20 00	21 19
	05	251	55-3		17-7		75	35-5	14-0		8	53-2	8-7	54-6	60	05 24	06 12	06 53	17 31	18 45	20 00	21 15
	06	266	55-5	S	7	16-8	90	08-5	14-1	N	8	44-5	8-7	54-6	N 58	05 26	06 11	06 50	17 35	18 46	19 59	21 12
	07	281	55-6		15-8		104	41-6	14-0		8	35-8	8-7	54-6	56	05 27	06 10	06 47	17 39	18 48	19 58	21 10
	08	296	55-7		14-9		119	14-6	14-1		8	27-1	8-8	54-6	54	05 28	06 09	06 44	17 42	18 49	19 58	21 07
	09	311	55-8	..	13-9		133	47-7	14-1		8	18-3	8-8	54-7	52	05 29	06 08	06 42	17 45	18 50	19 57	21 05
	10	326	56-0		13-0		148	20-8	14-1		8	09-5	8-8	54-7	50	05 30	06 08	06 40	17 47	18 52	19 57	21 03
	11	341	56-1		12-0		162	53-9	14-1		8	00-7	8-9	54-7	45	05 32	06 05	06 35	17 53	18 54	19 56	20 59
	12	356	56-2	S	7	11-0	177	27-0	14-1	N	7	51-8	8-9	54-7	N 40	05 32	06 04	06 31	17 58	18 56	19 55	20 55
	13	11	56-4		10-1		192	00-1	14-1		7	42-9	9-0	54-7	35	05 33	06 02	06 27	18 02	18 58	19 54	20 52
	14	26	56-5		09-1		206	33-2	14-2		7	33-9	9-0	54-7	30	05 32	06 00	06 24	18 05	18 59	19 54	20 49
	15	41	56-6	..	08-2		221	06-4	14-1		7	24-9	9-0	54-7	20	05 31	05 56	06 18	18 12	19 02	19 53	20 45
	16	56	56-7		07-2		235	39-5	14-1		7	15-9	9-1	54-8	N 10	05 28	05 52	06 13	18 17	19 04	19 52	20 40
17	71	56-9		06-3		250	12-6	14-1		7	06-8	9-1	54-8	0	05 24	05 48	06 09	18 22	19 06	19 51	20 37	
18	86	57-0	S	7	05-3	264	45-7	14-2	N	6	57-7	9-2	54-8	S 10	05 18	05 42	06 04	18 27	19 08	19 50	20 33	
19	101	57-1		04-4		279	18-9	14-1		6	48-5	9-2	54-8	20	05 10	05 36	05 58	18 32	19 11	19 49	20 29	
20	116	57-3		03-4		293	52-0	14-2		6	39-3	9-2	54-8	30	04 59	05 28	05 52	18 39	19 13	19 48	20 24	
21	131	57-4	..	02-5		308	25-2	14-1		6	30-1	9-2	54-8	35	04 52	05 23	05 48	18 42	19 15	19 48	20 21	
22	146	57-5		01-5		322	58-3	14-2		6	20-9	9-3	54-8	40	04 44	05 17	05 44	18 46	19 17	19 47	20 18	
23	161	57-6		7 00-5		337	31-5	14-1		6	11-6	9-3	54-9	45	04 33	05 09	05 39	18 51	19 19	19 46	20 15	
3 00	176	57-8	S	6	59-6	352	04-6	14-2	N	6	02-3	9-4	54-9	S 50	04 20	05 00	05 34	18 56	19 21	19 46	20 11	
01	191	57-9		58-6		6	37-8	14-1		5	52-9	9-4	54-9	52	04 13	04 56	05 31	18 59	19 22	19 45	20 09	
02	206	58-0		57-7		21	10-9	14-2		5	43-6	9-4	54-9	54	04 06	04 51	05 28	19 01	19 23	19 45	20 07	
03	221	58-2	..	56-7		35	44-1	14-1		5	34-2	9-5	54-9	56	03 57	04 46	05 25	19 04	19 24	19 44	20 05	
04	236	58-3		55-8		50	17-2	14-2		5	24-7	9-4	54-9	58	03 48	04 40	05 21	19 08	19 26	19 44	20 03	
05	251	58-4		54-8		64	50-4	14-1		5	15-3	9-5	54-9	S 60	03 36	04 33	05 17	19 11	19 27	19 43	20 00	
06	266	58-6	S	6	53-8	79	23-5	14-2	N	5	05-8	9-5	55-0									
07	281	58-7		52-9		93	56-7	14-1		4	56-3	9-6	55-0									
08	296	58-8		51-9		108	29-8	14-2		4	46-7	9-6	55-0									
09	311	59-0	..	51-0		123	03-0	14-1		4	37-1	9-6	55-0									
10	326	59-1		50-0		137	36-1	14-2		4	27-5	9-6	55-0									
11	341	59-2		49-1		152	09-3	14-1		4	17-9	9-6	55-0									
12	356	59-4	S	6	48-1	166	42-4	14-1	N	4	08-3	9-7	55-1	N 72	16 58	18 07	19 26	07 51	07 44	07 38	07 32	
13	11	59-5		47-1		181	15-5	14-2		3	58-6	9-7	55-1	N 70	17 07	18 09	19 20	07 38	07 38	07 37	07 36	
14	26	59-6		46-2		195	48-7	14-1		3	48-9	9-7	55-1	68	17 14	18 10	19 14	07 28	07 32	07 36	07 40	
15	41	59-8	..	45-2		210	21-8	14-1		3	39-2	9-7	55-1	66	17 19	18 11	19 10	07 20	07 28	07 35	07 43	
16	56	59-9		44-3		224	54-9	14-1		3	29-5	9-8	55-1	64	17 24	18 12	19 07	07 13	07 24	07 35	07 46	
17	72	00-0		43-3		239	28-0	14-1		3	19-7	9-8	55-1	62	17 28	18 13	19 04	07 06	07 21	07 34	07 48	
18	87	00-2	S	6	42-3	254	01-1	14-1	N	3	09-9	9-7	55-2	60	17 32	18 14	19 02	07 01	07 18	07 34	07 50	
19	102	00-3		41-4		268	34-2	14-1		3	00-2	9-9	55-2	N 58	17 35	18 14	19 00	06 56	07 15	07 33	07 52	
20	117	00-4		40-4		283	07-3	14-1		2	50-3	9-8	55-2	56	17 38	18 15	18 58	06 52	07 13	07 33	07 53	
21	132	00-6	..	39-5		297	40-4	14-1		2	40-5	9-8	55-2	54	17 41	18 16	18 57	06 48	07 11	07 33	07 54	
22	147	00-7		38-5		312	13-5	14-0		2	30-7	9-9	55-2	52	17 43	18 17	18 56	06 45	07 09	07 32	07 56	
23	162	00-8		37-5		326	46-5	14-1		2	20-8	9-9	55-2	50	17 45	18 17	18 55	06 42	07 07	07 32	07 57	
														45	17 50	18 19	18 53	06 35	07 04	07 31	07 59	
4 00	177	01-0	S	6	36-6	341	19-6	14-0	N	2	10-9	9-9	55-3	N 40	17 54	18 21	18 52	06 29	07 00	07 31	08 02	
01	192	01-1		35-6		355	52-6	14-0		2	01-0	9-9	55-3	35	17 57	18 23	18 52	06 24	06 58	07 30	08 03	
02	207	01-2		34-7		10	25-6	14-1		1	51-1	9-9	55-3	30	18 01	18 24	18 52	06 20	06 55	07 30	08 05	
03	222	01-4	..	33-7		24	58-7	14-0		1	41-2	9-9	55-3	20	18 06	18 28	18 53	06 12	06 51	07 29	08 08	
04	237	01-5		32-7		39	31-7	14-0		1	31-3	10-0	55-3	N 10	18 11	18 32	18 56	06 05	06 47	07 28	08 10	
05	252	01-6		31-8		54	04-7	14-0		1	21-3	10-0	55-3	0	18 15	18 36	19 00	05 59	06 43	07 28	08 13	
06	267	01-8	S	6	30-8	68	37-7	13-9	N	1	11-3	9-9	55-4	S 10	18 20	18 41	19 06	05 53	06 40	07 27	08 15	
07	282	01-9		29-9		83	10-6	14-0		1	01-4	10-0	55-4	20	18 25	18 48	19 14					

	ARIES		VENUS -4.3		MARS +0.4		JUPITER -1.6		SATURN +0.9		STARS			
G.M.T.	G.H.A.	G.H.A.	Dec.	G.H.A.	Dec.	G.H.A.	Dec.	G.H.A.	Dec.	G.H.A.	Dec.	Name	S.H.A.	Dec.
d h	° ' "	° ' "		° ' "		° ' "		° ' "		° ' "			° ' "	
5	00	162 30.0	141 36.3 N14	12.3	68 06.7 N26	18.6	222 18.3 S20	45.1	223 54.2 S20	48.2	Acamar	315 48.5	S 40 28.0	
	01	177 32.5	156 37.7	13.1	83 08.5	18.6	237 20.2	45.0	238 56.5	48.2	Achernar	335 56.6	S 57 26.3	
	02	192 35.0	171 39.0	13.9	98 10.2	18.5	252 22.2	44.9	253 58.7	48.2	Acrux	173 52.8	S 62 53.0	
	03	207 37.4	186 40.4	14.8	113 11.9	18.4	267 24.1	44.8	269 00.9	48.1	Adhara	255 43.4	S 28 55.4	
	04	222 39.9	201 41.7	15.6	128 13.6	18.3	282 26.1	44.7	284 03.1	48.1	Aldebaran	291 34.8	N 16 25.8	
05	237 42.4	216 43.1	16.4	143 15.3	18.3	297 28.0	44.6	299 05.4	48.0					
06	252 44.8	231 44.5 N14	17.2	158 17.0 N26	18.2	312 30.0 S20	44.5	314 07.6 S20	48.0	Alioth	166 54.9	N 56 10.1		
07	267 47.3	246 45.8	18.0	173 18.7	18.1	327 31.9	44.4	329 09.8	48.0	Alkaid	153 29.7	N 49 30.2		
08	282 49.8	261 47.2	18.8	188 20.4	18.0	342 33.9	44.4	344 12.0	47.9	Al Na'ir	28 33.8	S 47 09.9		
09	297 52.2	276 48.6	19.7	203 22.2	18.0	357 35.8	44.3	359 14.2	47.9	Alnilam	276 26.4	S 1 13.8		
10	312 54.7	291 50.0	20.5	218 23.9	17.9	12 37.8	44.2	14 16.5	47.8	Alphard	218 34.6	S 8 29.6		
11	327 57.1	306 51.3	21.3	233 25.6	17.8	27 39.8	44.1	29 18.7	47.8					
12	342 59.6	321 52.7 N14	22.1	248 27.3 N26	17.7	42 41.7 S20	44.0	44 20.9 S20	47.7	Alphecca	126 44.4	N 26 50.5		
13	358 02.1	336 54.1	22.9	263 29.0	17.7	57 43.7	43.9	59 23.1	47.7	Alpheratz	358 24.7	N 28 52.5		
14	13 04.5	351 55.5	23.7	278 30.7	17.6	72 45.6	43.8	74 25.4	47.7	Altair	62 47.0	N 8 45.8		
15	28 07.0	6 56.9	24.5	293 32.4	17.5	87 47.6	43.7	89 27.6	47.6	Ankaa	353 55.1	S 42 31.2		
16	43 09.5	21 58.3	25.3	308 34.1	17.4	102 49.5	43.6	104 29.8	47.6	Antares	113 14.7	S 26 20.7		
17	58 11.9	36 59.7	26.1	323 35.8	17.4	117 51.5	43.5	119 32.0	47.5					
18	73 14.4	52 01.1 N14	27.0	338 37.5 N26	17.3	132 53.4 S20	43.4	134 34.2 S20	47.5	Arcturus	146 31.6	N 19 22.9		
19	88 16.9	67 02.4	27.8	353 39.2	17.2	147 55.4	43.3	149 36.5	47.5	Atria	108 52.0	S 68 57.2		
20	103 19.3	82 03.8	28.6	8 40.9	17.1	162 57.3	43.2	164 38.7	47.4	Avior	234 33.6	S 59 23.4		
21	118 21.8	97 05.3	29.4	23 42.6	17.1	177 59.3	43.1	179 40.9	47.4	Bellatrix	279 14.4	N 6 18.7		
22	133 24.3	112 06.7	30.2	38 44.3	17.0	193 01.2	43.1	194 43.1	47.3	Betelgeuse	271 44.0	N 7 23.8		
23	148 26.7	127 08.1	31.0	53 46.0	16.9	208 03.2	43.0	209 45.4	47.3					
6	00	163 29.2	142 09.5 N14	31.8	68 47.7 N26	16.8	223 05.2 S20	42.9	224 47.6 S20	47.3	Canopus	264 13.5	S 52 40.9	
	01	178 31.6	157 10.9	32.6	83 49.4	16.8	238 07.1	42.8	239 49.8	47.2	Capella	281 32.8	N 45 57.6	
	02	193 34.1	172 12.3	33.4	98 51.1	16.7	253 09.1	42.7	254 52.0	47.2	Deneb	49 58.7	N 45 08.3	
	03	208 36.6	187 13.7	34.2	113 52.8	16.6	268 11.0	42.6	269 54.3	47.1	Denebola	183 13.6	N 14 47.2	
	04	223 39.0	202 15.1	34.9	128 54.5	16.5	283 13.0	42.5	284 56.5	47.1	Diphda	349 35.8	S 18 12.2	
05	238 41.5	217 16.6	35.7	143 56.2	16.5	298 14.9	42.4	299 58.7	47.1					
06	253 44.0	232 18.0 N14	36.5	158 57.8 N26	16.4	313 16.9 S20	42.3	315 00.9 S20	47.0	Dubhe	194 39.5	N 61 57.6		
07	268 46.4	247 19.4	37.3	173 59.5	16.3	328 18.8	42.2	330 03.2	47.0	Elmath	279 02.5	N 28 34.5		
08	283 48.9	262 20.9	38.1	189 01.2	16.2	343 20.8	42.1	345 05.4	46.9	Eltanin	91 04.6	N 51 29.4		
09	298 51.4	277 22.3	38.9	204 02.9	16.1	358 22.8	42.0	0 07.6	46.9	Enif	34 26.2	N 9 41.7		
10	313 53.8	292 23.7	39.7	219 04.6	16.1	13 24.7	41.9	15 09.8	46.9	Fomalhaut	16 07.9	S 29 49.8		
11	328 56.3	307 25.2	40.5	234 06.3	16.0	28 26.7	41.9	30 12.1	46.8					
12	343 58.7	322 26.6 N14	41.3	249 08.0 N26	15.9	43 28.6 S20	41.8	45 14.3 S20	46.8	Gacrux	172 44.4	S 56 53.7		
13	359 01.2	337 28.0	42.1	264 09.7	15.8	58 30.6	41.7	60 16.5	46.7	Gienah	176 32.7	S 17 19.6		
14	14 03.7	352 29.5	42.8	279 11.3	15.8	73 32.5	41.6	75 18.7	46.7	Hadar	149 43.5	S 60 11.1		
15	29 06.1	7 30.9	43.6	294 13.0	15.7	88 34.5	41.5	90 21.0	46.6	Hamal	328 45.6	N 23 16.6		
16	44 08.6	22 32.4	44.4	309 14.7	15.6	103 36.5	41.4	105 23.2	46.6	Kaus Aust.	84 36.3	S 34 24.1		
17	59 11.1	37 33.8	45.2	324 16.4	15.5	118 38.4	41.3	120 25.4	46.6					
18	74 13.5	52 35.3 N14	46.0	339 18.1 N26	15.4	133 40.4 S20	41.2	135 27.6 S20	46.5	Kochab	137 17.8	N 74 18.7		
19	89 16.0	67 36.8	46.7	354 19.8	15.4	148 42.3	41.1	150 29.9	46.5	Markab	14 18.0	N 14 59.6		
20	104 18.5	82 38.2	47.5	9 21.4	15.3	163 44.3	41.0	165 32.1	46.4	Menkar	314 56.5	N 3 56.1		
21	119 20.9	97 39.7	48.3	24 23.1	15.2	178 46.2	40.9	180 34.3	46.4	Menkent	148 53.9	S 36 10.7		
22	134 23.4	112 41.2	49.1	39 24.8	15.1	193 48.2	40.8	195 36.5	46.4	Miaplacidus	221 47.2	S 69 33.6		
23	149 25.9	127 42.6	49.8	54 26.5	15.1	208 50.2	40.7	210 38.8	46.3					
7	00	164 28.3	142 44.1 N14	50.6	69 28.2 N26	15.0	223 52.1 S20	40.6	225 41.0 S20	46.3	Mirfak	309 37.1	N 49 43.3	
	01	179 30.8	157 45.6	51.4	84 29.8	14.9	238 54.1	40.6	240 43.2	46.2	Nunki	76 47.4	S 26 20.7	
	02	194 33.2	172 47.0	52.2	99 31.5	14.8	253 56.0	40.5	255 45.4	46.2	Peacock	54 21.9	S 56 51.5	
	03	209 35.7	187 48.5	52.9	114 33.2	14.7	268 58.0	40.4	270 47.7	46.2	Pollux	244 15.8	N 28 07.2	
	04	224 38.2	202 50.0	53.7	129 34.9	14.7	284 00.0	40.3	285 49.9	46.1	Procyon	245 40.9	N 5 19.3	
05	239 40.6	217 51.5	54.5	144 36.5	14.6	299 01.9	40.2	300 52.1	46.1					
06	254 43.1	232 53.0 N14	55.2	159 38.2 N26	14.5	314 03.9 S20	40.1	315 54.3 S20	46.0	Rasalhague	96 43.2	N 12 35.1		
07	269 45.6	247 54.5	56.0	174 39.9	14.4	329 05.8	40.0	330 56.6	46.0	Regulus	208 25.2	N 12 09.3		
08	284 48.0	262 56.0	56.7	189 41.5	14.4	344 07.8	39.9	345 58.8	46.0	Rigel	281 50.0	S 8 15.0		
09	299 50.5	277 57.5	57.5	204 43.2	14.3	359 09.8	39.8	1 01.0	45.9	Rigel Kent.	140 45.3	S 60 40.2		
10	314 53.0	292 59.0	58.3	219 44.9	14.2	14 11.7	39.7	16 03.3	45.9	Sabik	102 57.9	S 15 40.6		
11	329 55.4	308 00.5	59.0	234 46.5	14.1	29 13.7	39.6	31 05.5	45.8					
12	344 57.9	323 02.0 N14	59.8	249 48.2 N26	14.0	44 15.6 S20	39.5	46 07.7 S20	45.8	Schedar	350 26.1	N 56 19.5		
13	0 00.4	338 03.5	15 00.5	264 49.9	14.0	59 17.6	39.4	61 09.9	45.8	Shaula	97 15.6	N 37 04.4		
14	15 02.8	353 05.0	01.3	279 51.5	13.9	74 19.6	39.4	76 12.2	45.7	Sirius	259 08.4	S 16 40.0		
15	30 05.3	8 06.5	02.1	294 53.2	13.8	89 21.5	39.3	91 14.4	45.7	Spica	159 12.7	S 10 57.6		
16	45 07.7	23 08.0	02.8	309 54.9	13.7	104 23.5	39.2	106 16.6	45.6	Suhail	223 21.1	S 43 16.8		
17	60 10.2	38 09.5	03.6	324 56.5	13.6	119 25.4	39.1	121 18.9	45.6					
18	75 12.7	53 11.0 N15	04.3	339 58.2 N26	13.6	134 27.4 S20	39.0	136 21.1 S20	45.6	Vega	81 05.9	N 38 44.6		
19	90 15.1	68 12.6	05.1	354 59.9	13.5	149 29.4	38.9	151 23.3	45.5	Zuben 'ubi	137 49.0	S 15 52.8		
20	105 17.6	83 14.1	05.8	10 01.5	13.4	164 31.3	38.8	166 25.5	45.5					
21	120 20.1	98 15.6	06.6	25 03.2	13.3	179 33.3	38.7	181 27.8	45.4					
22	135 22.5	113 17.1	07.3	40 04.8	13.2	194 35.2	38.6	196 30.0	45.4					
23	150 25.0	128 18.7	08.0	55 06.5	13.2	209 37.2	38.5	211 32.2	45.4					
Mer. Pass. 13 03.9		v 1.4 d 0.8		v 1.7 d 0.1		v 2.0 d 0.1		v 2.2 d 0.0				S.H.A.	Mer. Pass.	
												° ' "	h m	
												Venus	338 40.3 14 30	
												Mars	265 18.5 19 23	
												Jupiter	59 36.0 9 06	
												Saturn	61 18.4 9 00	

G.M.T.		SUN		MOON				Lat.	Twilight		Sun-rise	Moonrise					
		G.H.A.	Dec.	G.H.A.	φ	Dec.	d		H.P.	Naut.		Civil	5	6	7	8	
d	h	$^{\circ}$	'	$^{\circ}$	'	$^{\circ}$	'	$^{\circ}$	'	$^{\circ}$	'	$^{\circ}$	'	$^{\circ}$	'	$^{\circ}$	'
SUNDAY	5 00	177 04.3	S 6 13.5	330 28.5	13.6	S 1 49.2	10.0	55.7	N 72	04 46	06 04	07 12	21 48	23 33	25 25	01 25	
	01	192 04.4	12.5	345 01.1	13.6	1 59.2	10.1	55.7	N 70	04 53	06 04	07 05	21 40	23 17	24 59	00 59	
	02	207 04.6	11.6	359 33.7	13.6	2 09.3	10.0	55.7	68	04 59	06 04	07 00	21 33	23 05	24 39	00 39	
	03	222 04.7	10.6	14 06.3	13.5	2 19.3	10.0	55.7	66	05 04	06 04	06 55	21 27	22 55	24 23	00 23	
	04	237 04.8	09.6	28 38.8	13.6	2 29.3	10.1	55.8	64	05 09	06 04	06 51	21 23	22 46	24 10	00 10	
	05	252 05.0	08.7	43 11.4	13.5	2 39.4	10.0	55.8	62	05 12	06 03	06 48	21 19	22 39	24 00	00 00	
	06	267 05.1	S 6 07.7	57 43.9	13.4	S 2 49.4	10.0	55.8	60	05 15	06 03	06 44	21 15	22 33	23 51	25 07	
	07	282 05.3	06.8	72 16.3	13.5	2 59.4	10.0	55.8	N 58	05 17	06 03	06 42	21 12	22 27	23 42	24 57	
	08	297 05.4	05.8	86 48.8	13.4	3 09.4	10.1	55.8	56	05 20	06 02	06 39	21 10	22 22	23 35	24 48	
	09	312 05.6	04.8	101 21.2	13.4	3 19.5	9.9	55.9	54	05 21	06 02	06 37	21 07	22 18	23 29	24 40	
	10	327 05.7	03.9	115 53.6	13.3	3 29.4	10.0	55.9	52	05 23	06 02	06 35	21 05	22 14	23 24	24 33	
	11	342 05.8	02.9	130 25.9	13.4	3 39.4	10.0	55.9	50	05 24	06 01	06 34	21 03	22 10	23 18	24 26	
	12	357 06.0	S 6 01.9	144 58.3	13.3	S 3 49.4	10.0	55.9	45	05 26	06 00	06 30	20 59	22 03	23 08	24 13	
	13	12 06.1	01.0	159 30.6	13.2	3 59.4	9.9	55.9	N 40	05 28	05 59	06 26	20 55	21 56	22 59	24 01	
	14	27 06.3	6 00.0	174 02.8	13.3	4 09.3	10.0	56.0	35	05 29	05 58	06 23	20 52	21 51	22 51	23 52	
	15	42 06.4	5 59.0	188 35.1	13.2	4 19.3	9.9	56.0	30	05 29	05 57	06 21	20 49	21 46	22 44	23 44	
	16	57 06.5	58.1	203 07.3	13.1	4 29.2	9.9	56.0	20	05 29	05 54	06 16	20 45	21 38	22 33	23 29	
	17	72 06.7	57.1	217 39.4	13.2	4 39.1	9.9	56.0	N 10	05 27	05 51	06 12	20 40	21 30	22 22	23 16	
	18	87 06.8	S 5 56.1	232 11.6	13.1	S 4 49.0	9.9	56.0	0	05 23	05 47	06 08	20 37	21 24	22 13	23 05	
	19	102 07.0	55.2	246 43.7	13.0	4 58.9	9.9	56.1	S 10	05 18	05 43	06 04	20 33	21 17	22 03	22 53	
	20	117 07.1	54.2	261 15.7	13.1	5 08.8	9.8	56.1	20	05 11	05 37	05 59	20 29	21 10	21 53	22 40	
	21	132 07.3	53.2	275 47.8	13.0	5 18.6	9.8	56.1	30	05 02	05 30	05 54	20 24	21 02	21 42	22 26	
	22	147 07.4	52.3	290 19.8	12.9	5 28.4	9.9	56.1	35	04 55	05 26	05 51	20 21	20 57	21 35	22 18	
	23	162 07.6	51.3	304 51.7	12.9	5 38.3	9.7	56.1	40	04 48	05 20	05 48	20 18	20 52	21 28	22 09	
6 00	177 07.7	S 5 50.3	319 23.6	12.9	S 5 48.0	9.8	56.2	45	04 38	05 14	05 43	20 15	20 46	21 19	21 58		
01	192 07.8	49.4	333 55.5	12.8	5 57.8	9.8	56.2	S 50	04 26	05 06	05 39	20 11	20 38	21 09	21 45		
02	207 08.0	48.4	348 27.3	12.8	6 07.6	9.7	56.2	52	04 20	05 02	05 36	20 09	20 35	21 04	21 39		
03	222 08.1	47.4	2 59.1	12.8	6 17.3	9.7	56.2	54	04 13	04 57	05 34	20 07	20 31	20 59	21 32		
04	237 08.3	46.5	17 30.9	12.7	6 27.0	9.7	56.3	56	04 05	04 53	05 31	20 05	20 27	20 53	21 24		
05	252 08.4	45.5	32 02.6	12.7	6 36.7	9.6	56.3	58	03 56	04 47	05 28	20 03	20 23	20 47	21 16		
06	267 08.6	S 5 44.5	46 34.3	12.7	S 6 46.3	9.7	56.3	S 60	03 46	04 41	05 24	20 00	20 18	20 40	21 07		
07	282 08.7	43.5	61 06.0	12.6	6 56.0	9.6	56.3	Lat.		Sun-set		Twilight		Moonset			
08	297 08.9	42.6	75 37.6	12.5	7 05.6	9.5	56.3			Civil		Naut.		5			
09	312 09.0	41.6	90 09.1	12.5	7 15.1	9.6	56.4							6			
10	327 09.2	40.6	104 40.6	12.5	7 24.7	9.5	56.4							7			
11	342 09.3	39.7	119 12.1	12.4	7 34.2	9.5	56.4							8			
12	357 09.4	S 5 38.7	133 43.5	12.4	S 7 43.7	9.4	56.4	$^{\circ}$	h m	h m	h m	h m	h m	h m	h m		
13	12 09.6	37.7	148 14.9	12.3	7 53.1	9.5	56.4	N 72	17 13	18 21	19 40	07 32	07 26	07 19	07 10		
14	27 09.7	36.8	162 46.2	12.3	8 02.6	9.4	56.5	N 70	17 20	18 21	19 32	07 36	07 36	07 36	07 38		
15	42 09.9	35.8	177 17.5	12.3	8 12.0	9.3	56.5	68	17 25	18 21	19 26	07 40	07 44	07 50	07 59		
16	57 10.0	34.8	191 48.8	12.2	8 21.3	9.3	56.5	66	17 29	18 21	19 20	07 43	07 51	08 01	08 15		
17	72 10.2	33.9	206 20.0	12.1	8 30.6	9.3	56.5	64	17 33	18 21	19 16	07 46	07 57	08 11	08 29		
18	87 10.3	S 5 32.9	220 51.1	12.1	S 8 39.9	9.3	56.6	62	17 36	18 21	19 12	07 48	08 02	08 19	08 40		
19	102 10.5	31.9	235 22.2	12.1	8 49.2	9.2	56.6	60	17 39	18 21	19 09	07 50	08 07	08 26	08 50		
20	117 10.6	30.9	249 53.3	12.0	8 58.4	9.2	56.6	N 58	17 42	18 21	19 07	07 52	08 11	08 32	08 59		
21	132 10.8	30.0	264 24.3	11.9	9 07.6	9.1	56.6	56	17 44	18 22	19 04	07 53	08 14	08 38	09 06		
22	147 10.9	29.0	278 55.2	11.9	9 16.7	9.1	56.6	54	17 46	18 22	19 03	07 54	08 17	08 43	09 13		
23	162 11.1	28.0	293 26.1	11.9	9 25.8	9.1	56.7	52	17 48	18 22	19 01	07 56	08 20	08 48	09 19		
7 00	177 11.2	S 5 27.1	307 57.0	11.8	S 9 34.9	9.0	56.7	50	17 50	18 22	19 00	07 57	08 23	08 52	09 24		
01	192 11.4	26.1	322 27.8	11.7	9 43.9	9.0	56.7	45	17 54	18 23	18 57	07 59	08 29	09 01	09 36		
02	207 11.5	25.1	336 58.5	11.7	9 52.9	8.9	56.7	N 40	17 57	18 24	18 55	08 02	08 34	09 08	09 46		
03	222 11.7	24.2	351 29.2	11.7	10 01.8	8.9	56.8	35	18 00	18 25	18 54	08 03	08 38	09 15	09 55		
04	237 11.8	23.2	5 59.9	11.5	10 10.7	8.8	56.8	30	18 03	18 26	18 54	08 05	08 41	09 20	10 02		
05	252 12.0	22.2	20 30.4	11.6	10 19.5	8.8	56.8	20	18 07	18 29	18 54	08 08	08 48	09 30	10 15		
06	267 12.1	S 5 21.2	35 01.0	11.5	S 10 28.3	8.8	56.8	N 10	18 11	18 32	18 56	08 10	08 54	09 39	10 27		
07	282 12.3	20.3	49 31.5	11.4	10 37.1	8.7	56.9	0	18 15	18 35	19 00	08 13	08 59	09 47	10 37		
08	297 12.4	19.3	64 01.9	11.4	10 45.8	8.7	56.9	S 10	18 19	18 40	19 04	08 15	09 04	09 55	10 48		
09	312 12.6	18.3	78 32.3	11.3	10 54.5	8.6	56.9	20	18 23	18 45	19 11	08 18	09 10	10 04	10 59		
10	327 12.7	17.4	93 02.6	11.3	11 03.1	8.5	56.9	30	18 28	18 52	19 20	08 20	09 16	10 14	11 13		
11	342 12.9	16.4	107 32.9	11.2	11 11.6	8.5	57.0	35	18 31	18 57	19 27	08 22	09 20	10 19	11 20		
12	357 13.0	S 5 15.4	122 03.1	11.1	S 11 20.1	8.5	57.0	40	18 34	19 02	19 34	08 24	09 24	10 26	11 28		
13	12 13.2	14.4	136 33.2	11.1	11 28.6	8.4	57.0	45	18 38	19 08	19 44	08 26	09 29	10 33	11 39		
14	27 13.3	13.5	151 03.3	11.1	11 37.0	8.4	57.0	S 50	18 43	19 16	19 56	08 28	09 35	10 43	11 51		
15	42 13.5	12.5	165 33.4	10.9	11 45.4	8.2	57.0	52	18 45	19 20	20 02	08 29	09 38	10 47	11 57		
16	57 13.6	11.5	180 03.3	11.0	11 53.6	8.3	57.1	54	18 48	19 24	20 08	08 31	09 41	10 52	12 03		
17	72 13.8	10.5	194 33.3	10.8	12 01.9	8.2	57.1	56	18 50	19 29	20 16	08 32	09 44	10 57	12 10		
18	87 13.9	S 5 09.6	209 03.1	10.8	S 12 10.1	8.1	57.1	58	18 53	19 34	20 24	08 34	09 48	11 03	12 18		
19	102 14.1	08.6	223 32.9	10.8	12 18.2	8.1	57.1	S 60	18 57	19 40	20 34	08 35	09 52	11 09	12 27		
20	117 14.2	07.6	238 02.7	10.7	12 26.3	8.0	57.2	Day		SUN		MOON					
21	132 14.4	06.7	252 32.4	10.6	12 34.3	7.9	57.2			Eqn. of Time		Mer. Pass.		Mer. Pass.			
</																	

G.M.T.		ARIES			VENUS -4.3			MARS +0.5			JUPITER -1.6			SATURN +0.9			STARS		
		G.H.A.		Dec.	G.H.A.		Dec.	G.H.A.		Dec.	G.H.A.		Dec.	G.H.A.		Dec.	Name	S.H.A.	Dec.
d	h																		
WEDNESDAY	8 00	165	27.5	143 20.2	N 15 08.8	70 08.2	N 26 13.1	224 39.2	S 20 38.4	226 34.5	S 20 45.3	Acamar	315 48.5	S 40 28.0					
	01	180	29.9	158 21.7	09.5	85 09.8	13.0	239 41.1	38.3	241 36.7	45.3	Achernar	335 56.7	S 57 26.3					
	02	195	32.4	173 23.3	10.3	100 11.5	12.9	254 43.1	38.2	256 38.9	45.2	Acruz	173 52.8	S 62 53.0					
	03	210	34.8	188 24.8	11.0	115 13.1	12.8	269 45.1	38.2	271 41.1	45.2	Adhara	255 43.4	S 28 55.5					
	04	225	37.3	203 26.4	11.8	130 14.8	12.8	284 47.0	38.1	286 43.4	45.2	Aldebaran	291 34.8	N 16 25.8					
	05	240	39.8	218 27.9	12.5	145 16.4	12.7	299 49.0	38.0	301 45.6	45.1								
	06	255	42.2	233 29.5	N 15 13.2	160 18.1	N 26 12.6	314 50.9	S 20 37.9	316 47.8	S 20 45.1	Alioth	166 54.9	N 56 10.1					
	07	270	44.7	248 31.0	14.0	175 19.7	12.5	329 52.9	37.8	331 50.1	45.0	Alkaid	153 29.7	N 49 30.2					
	08	285	47.2	263 32.6	14.7	190 21.4	12.4	344 54.9	37.7	346 52.3	45.0	Al Na'ir	28 33.8	S 47 09.0					
	09	300	49.6	278 34.2	15.4	205 23.1	12.4	359 56.8	37.6	1	54.5	45.0	Anilam	276 26.4	S 1 13.8				
	10	315	52.1	293 35.7	16.2	220 24.7	12.3	14 58.8	37.5	16 56.8	44.9	Alphard	218 34.6	S 8 29.6					
	11	330	54.6	308 37.3	16.9	235 26.4	12.2	30 00.8	37.4	31 59.0	44.9								
	12	345	57.0	323 38.9	N 15 17.6	250 28.0	N 26 12.1	45 02.7	S 20 37.3	47 01.2	S 20 44.8	Alphecca	126 44.3	N 26 50.5					
	13	0	59.5	338 40.4	18.3	265 29.6	12.0	60 04.7	37.2	62 03.4	44.8	Alpheratz	358 24.7	N 28 52.4					
	14	16	02.0	353 42.0	19.1	280 31.3	11.9	75 06.7	37.1	77 05.7	44.8	Altair	62 47.0	N 8 45.8					
	15	31	04.4	8 43.6	19.8	295 32.9	11.9	90 08.6	37.0	92 07.9	44.7	Ankaa	353 55.1	S 42 31.2					
	16	46	06.9	23 45.2	20.5	310 34.6	11.8	105 10.6	37.0	107 10.1	44.7	Antares	113 14.7	S 26 20.7					
	17	61	09.3	38 46.7	21.2	325 36.2	11.7	120 12.6	36.9	122 12.4	44.6								
	18	76	11.8	53 48.3	N 15 22.0	340 37.9	N 26 11.6	135 14.5	S 20 36.8	137 14.6	S 20 44.6	Arcturus	146 31.6	N 19 22.9					
	19	91	14.3	68 49.9	22.7	355 39.5	11.5	150 16.5	36.7	152 16.8	44.6	Atria	108 51.9	S 68 57.2					
	20	106	16.7	83 51.5	23.4	10 41.2	11.5	165 18.5	36.6	167 19.1	44.5	Avior	234 33.7	S 59 23.4					
	21	121	19.2	98 53.1	24.1	25 42.8	11.4	180 20.4	36.5	182 21.3	44.5	Bellatrix	279 14.4	N 6 18.7					
	22	136	21.7	113 54.7	24.8	40 44.4	11.3	195 22.4	36.4	197 23.5	44.4	Betelgeuse	271 44.0	N 7 23.8					
	23	151	24.1	128 56.3	25.6	55 46.1	11.2	210 24.4	36.3	212 25.8	44.4								
THURSDAY	9 00	166	26.6	143 57.9	N 15 26.3	70 47.7	N 26 11.1	225 26.3	S 20 36.2	227 28.0	S 20 44.4	Canopus	264 13.5	S 52 40.9					
	01	181	29.1	158 59.5	27.0	85 49.4	11.1	240 28.3	36.1	242 30.2	44.3	Capella	281 32.8	N 45 57.6					
	02	196	31.5	174 01.1	27.7	100 51.0	11.0	255 30.3	36.0	257 32.5	44.3	Deneb	49 58.7	N 45 08.3					
	03	211	34.0	189 02.7	28.4	115 52.6	10.9	270 32.2	35.9	272 34.7	44.2	Denebola	183 13.6	N 14 47.2					
	04	226	36.4	204 04.3	29.1	130 54.3	10.8	285 34.2	35.8	287 36.9	44.2	Diphda	349 35.8	S 18 12.2					
	05	241	38.9	219 05.9	29.8	145 55.9	10.7	300 36.2	35.8	302 39.2	44.2								
	06	256	41.4	234 07.6	N 15 30.5	160 57.5	N 26 10.6	315 38.1	S 20 35.7	317 41.4	S 20 44.1	Dubhe	194 39.5	N 61 57.6					
	07	271	43.8	249 09.2	31.2	175 59.2	10.6	330 40.1	35.6	332 43.6	44.1	Elmath	279 02.5	N 28 34.5					
	08	286	46.3	264 10.8	31.9	191 00.8	10.5	345 42.1	35.5	347 45.9	44.1	Eltanin	91 04.6	N 51 29.4					
	09	301	48.8	279 12.4	32.6	206 02.4	10.4	0 44.0	35.4	2 48.1	44.0	Enif	34 26.2	N 9 41.7					
	10	316	51.2	294 14.1	33.3	221 04.1	10.3	15 46.0	35.3	17 50.3	44.0	Fomalhaut	16 07.9	S 29 49.8					
	11	331	53.7	309 15.7	34.0	236 05.7	10.2	30 48.0	35.2	32 52.6	43.9								
	12	346	56.2	324 17.3	N 15 34.7	251 07.3	N 26 10.1	45 49.9	S 20 35.1	47 54.8	S 20 43.9	Gacrux	172 44.4	S 56 53.7					
	13	1	58.6	339 19.0	35.4	266 09.0	10.1	60 51.9	35.0	62 57.0	43.9	Gienah	176 32.7	S 17 19.6					
	14	17	01.1	354 20.6	36.1	281 10.6	10.0	75 53.9	34.9	77 59.3	43.8	Hadar	149 43.5	S 60 11.0					
	15	32	03.6	9 22.3	36.8	296 12.2	09.9	90 55.8	34.8	93 01.5	43.8	Hamal	328 45.6	N 23 16.6					
	16	47	06.0	24 23.9	37.5	311 13.9	09.8	105 57.8	34.7	108 03.7	43.7	Kaus Aust.	84 36.3	S 34 24.1					
	17	62	08.5	39 25.6	38.2	326 15.5	09.7	120 59.8	34.7	123 06.0	43.7								
	18	77	10.9	54 27.2	N 15 38.9	341 17.1	N 26 09.6	136 01.7	S 20 34.6	138 08.2	S 20 43.7	Kochab	137 17.8	N 74 18.7					
	19	92	13.4	69 28.9	39.6	356 18.7	09.6	151 03.7	34.5	153 10.4	43.6	Markab	14 18.0	N 14 59.6					
	20	107	15.9	84 30.5	40.3	11 20.4	09.5	166 05.7	34.4	168 12.7	43.6	Menkar	314 56.6	N 3 56.1					
	21	122	18.3	99 32.2	41.0	26 22.0	09.4	181 07.7	34.3	183 14.9	43.5	Menkent	148 53.9	S 36 10.7					
	22	137	20.8	114 33.9	41.7	41 23.6	09.3	196 09.6	34.2	198 17.1	43.5	Miaplacidus	221 47.2	S 69 33.7					
	23	152	23.3	129 35.5	42.4	56 25.2	09.2	211 11.6	34.1	213 19.4	43.5								
FRIDAY	10 00	167	25.7	144 37.2	N 15 43.0	71 26.8	N 26 09.1	226 13.6	S 20 34.0	228 21.6	S 20 43.4	Mirfak	309 37.2	N 49 43.5					
	01	182	28.2	159 38.9	43.7	86 28.5	09.1	241 15.5	33.9	243 23.8	43.4	Nunki	76 47.4	S 26 20.7					
	02	197	30.7	174 40.5	44.4	101 30.1	09.0	256 17.5	33.8	258 26.1	43.3	Peacock	54 21.9	S 56 51.5					
	03	212	33.1	189 42.2	45.1	116 31.7	08.9	271 19.5	33.7	273 28.3	43.3	Pollux	244 15.8	N 28 07.2					
	04	227	35.6	204 43.9	45.8	131 33.3	08.8	286 21.4	33.6	288 30.5	43.3	Procyon	245 40.9	N 5 19.3					
	05	242	38.1	219 45.6	46.4	146 34.9	08.7	301 23.4	33.6	303 32.8	43.2								
	06	257	40.5	234 47.3	N 15 47.1	161 36.6	N 26 08.6	316 25.4	S 20 33.5	318 35.0	S 20 43.2	Rasalhague	96 43.1	N 12 35.1					
	07	272	43.0	249 49.0	47.8	176 38.2	08.5	331 27.4	33.4	333 37.2	43.1	Regulus	208 25.2	N 12 09.3					
	08	287	45.4	264 50.7	48.5	191 39.8	08.5	346 29.3	33.3	348 39.5	43.1	Rigel	281 50.0	S 8 15.0					
	09	302	47.9	279 52.4	49.1	206 41.4	08.4	1 31.3	33.2	3 41.7	43.1	Rigel Kent.	140 45.3	S 60 40.3					
	10	317	50.4	294 54.1	49.8	221 43.0	08.3	16 33.3	33.1	18 44.0	43.0	Sabik	102 57.9	S 15 40.6					
	11	332	52.8	309 55.8	50.5	236 44.6	08.2	31 35.3	33.0	33 46.2	43.0								
	12	347	55.3	324 57.5	N 15 51.1	251 46.2	N 26 08.1	46 37.2	S 20 32.9	48 48.4	S 20 43.0	Schedar	350 26.1	N 56 19.4					
	13	2	57.8	339 59.2	51.8	266 47.9	08.0	61 39.2	32.8	63 50.7	42.9	Shaula	97 15.6	S 37 04.4					
	14	18	00.2	355 00.9	52.5	281 49.5	08.0	76 41.2	32.7	78 52.9	42.9	Sirius	259 08.4	S 16 40.0					
	15	33	02.7	10 02.6	53.1	296 51.1	07.9	91 43.1	32.6	93 55.1	42.8	Spica	159 12.6	S 10 57.6					
	16	48	05.2	25 04.3	53.8	311 52.7	07.8	106 45.1	32.5	108 57.4	42.8	Suhail	223 21.1	S 43 16.8					
	17	63	07.6	40 06.0	54.5	326 54.3	07.7	121 47.1	32.5	123 59.6	42.8								
	18	78	10.1	55 07.8	N 15 55.1	341 55.9	N 26 07.6	136 49.1	S 20 32.4	139 01.8	S 20 42.7	Vega	81 05.9	N 38 44.6					
	19	93	12.6	70 09.5	55.8	356 57.5	07.5	151 51.0	32.3	154 04.1	42.7	Zuben'ubi	137 49.0	S 15 52.8					
	20	108	15.0	85 11.2	56.4	11 59.1	07.4	166 53.0	32.2	169 06.3	42.6								
	21	123	17.5	100 12.9	57.1	27 00.7	07.4	181 55.0	32.1	184 08.5	42.6								
	22	138	19.9	115 14.7	57.7	42 02.3	07.3	196 57.0	32.0	199 10.8	42.6	Venus	337 31.3	14 23					
	23	153	22.4	130 16.4	58.4	57 03.9	07.2	211 58.9	31.9	214 13.0	42.5	Mars	264 21.1	19 15					
Mer. Pass. 12 52.1		v 1.																	

G.M.T.	ARIES		VENUS -4.3		MARS +0.5		JUPITER -1.6		SATURN +0.9		STARS		
	G.H.A.		G.H.A.	Dec.	G.H.A.	Dec.	G.H.A.	Dec.	G.H.A.	Dec.	Name	S.H.A.	Dec.
SATURDAY	11 00	168 24.9	145 18.2	N15 59.0	72 05.5	N26 07.1	227 00.9	S20 31.8	229 15.3	S20 42.5	Acamar	315 48.6	S 40 28.0
	01	183 27.3	160 19.9	15 59.7	87 07.1	07.0	242 02.9	31.7	244 17.5	42.4	Acchernar	335 56.7	S 57 26.3
	02	198 29.8	175 21.6	16 00.3	102 08.7	06.9	257 04.9	31.6	259 19.7	42.4	Acrux	173 52.8	S 62 53.0
	03	213 32.3	190 23.4	.. 01.0	117 10.3	.. 06.8	272 06.8	.. 31.5	274 22.0	.. 42.4	Adhara	255 43.4	S 28 55.5
	04	228 34.7	205 25.1	01.6	132 11.9	06.8	287 08.8	31.4	289 24.2	42.3	Aldebaran	291 34.8	N 16 25.8
	05	243 37.2	220 26.9	02.3	147 13.5	06.7	302 10.8	31.4	304 26.4	42.3			
	06	258 39.7	235 28.7	N16 02.9	162 15.1	N26 06.6	317 12.8	S20 31.3	319 28.7	S20 42.2	Alioth	166 54.9	N 56 10.1
	07	273 42.1	250 30.4	03.6	177 16.7	06.5	332 14.7	31.2	334 30.9	42.2	Alkaid	153 29.6	N 49 30.2
	08	288 44.6	265 32.2	04.2	192 18.3	06.4	347 16.7	31.1	349 33.2	42.2	Al Na'ir	28 33.7	S 47 09.0
	09	303 47.0	280 34.0	.. 04.8	207 19.9	.. 06.3	2 18.7	.. 31.0	4 35.4	.. 42.1	Alnilam	276 26.4	S 1 13.8
	10	318 49.5	295 35.7	05.5	222 21.5	06.2	17 20.7	30.9	19 37.6	42.1	Alphard	218 34.6	S 8 29.6
	11	333 52.0	310 37.5	06.1	237 23.1	06.1	32 22.6	30.8	34 39.9	42.1			
	12	348 54.4	325 39.3	N16 06.7	252 24.7	N26 06.1	47 24.6	S20 30.7	49 42.1	S20 42.0	Alphecca	126 44.3	N 26 50.5
	13	3 56.9	340 41.1	07.4	267 26.3	06.0	62 26.6	30.6	64 44.4	42.0	Alpheratz	358 24.7	N 28 52.4
	14	18 59.4	355 42.9	08.0	282 27.9	05.9	77 28.6	30.5	79 46.6	41.9	Altair	62 46.9	N 8 45.8
	15	34 01.8	10 44.6	.. 08.6	297 29.5	.. 05.8	92 30.5	.. 30.4	94 48.8	.. 41.9	Ankaa	353 55.1	S 42 31.2
	16	49 04.3	25 46.4	09.3	312 31.1	05.7	107 32.5	30.3	109 51.1	41.9	Antares	113 14.7	S 26 20.7
	17	64 06.8	40 48.2	09.9	327 32.7	05.6	122 34.5	30.3	124 53.3	41.8			
	18	79 09.2	55 50.0	N16 10.5	342 34.3	N26 05.5	137 36.5	S20 30.2	139 55.6	S20 41.8	Arcturus	146 31.5	N 19 22.9
	19	94 11.7	70 51.8	11.2	357 35.9	05.4	152 38.5	30.1	154 57.8	41.7	Atria	108 51.9	S 68 57.2
	20	109 14.2	85 53.6	11.8	12 37.4	05.3	167 40.4	30.0	170 00.0	41.7	Avior	234 33.7	S 59 23.4
	21	124 16.6	100 55.4	.. 12.4	27 39.0	.. 05.3	182 42.4	.. 29.9	185 02.3	.. 41.7	Bellatrix	279 14.4	N 6 18.7
	22	139 19.1	115 57.2	13.0	42 40.6	05.2	197 44.4	29.8	200 04.5	41.6	Betelgeuse	271 44.0	N 7 23.8
	23	154 21.5	130 59.0	13.6	57 42.2	05.1	212 46.4	29.7	215 06.8	41.6			
SUNDAY	12 00	169 24.0	146 00.9	N16 14.3	72 43.8	N26 05.0	227 48.3	S20 29.6	230 09.0	S20 41.6	Canopus	264 13.5	S 52 40.9
	01	184 26.5	161 02.7	14.9	87 45.4	04.9	242 50.3	29.5	245 11.2	41.5	Capella	281 32.8	N 45 57.6
	02	199 28.9	176 04.5	15.5	102 47.0	04.8	257 52.3	29.4	260 13.5	41.5	Deneb	49 58.7	N 45 08.3
	03	214 31.4	191 06.3	.. 16.1	117 48.6	.. 04.7	272 54.3	.. 29.3	275 15.7	.. 41.4	Denebola	183 13.6	N 14 47.2
	04	229 33.9	206 08.1	16.7	132 50.1	04.6	287 56.3	29.2	290 18.0	41.4	Diphda	349 35.8	S 18 12.2
	05	244 36.3	221 10.0	17.3	147 51.7	04.5	302 58.2	29.2	305 20.2	41.4			
	06	259 38.8	236 11.8	N16 17.9	162 53.3	N26 04.5	318 00.2	S20 29.1	320 22.4	S20 41.3	Dubhe	194 39.5	N 61 57.6
	07	274 41.3	251 13.6	18.5	177 54.9	04.4	333 02.2	29.0	335 24.7	41.3	Elmath	279 02.6	N 28 34.5
	08	289 43.7	266 15.5	19.1	192 56.5	04.3	348 04.2	28.9	350 26.9	41.3	Eltanin	91 04.6	N 51 29.4
	09	304 46.2	281 17.3	.. 19.8	207 58.0	.. 04.2	3 06.2	.. 28.8	5 29.2	.. 41.2	Enif	34 26.2	N 9 41.7
	10	319 48.7	296 19.2	20.4	222 59.6	04.1	18 08.1	28.7	20 31.4	41.2	Fomalhaut	16 07.9	S 29 49.8
	11	334 51.1	311 21.0	21.0	238 01.2	04.0	33 10.1	28.6	35 33.7	41.1			
	12	349 53.6	326 22.9	N16 21.6	253 02.8	N26 03.9	48 12.1	S20 28.5	50 35.9	S20 41.1	Gacrux	172 44.4	S 56 53.7
	13	4 56.0	341 24.7	22.2	268 04.4	03.8	63 14.1	28.4	65 38.1	41.1	Gienah	176 32.6	S 17 19.6
	14	19 58.5	356 26.6	22.8	283 05.9	03.7	78 16.1	28.3	80 40.4	41.0	Hadar	149 43.5	S 60 11.0
	15	35 01.0	11 28.5	.. 23.3	298 07.5	.. 03.7	93 18.0	.. 28.2	95 42.6	.. 41.0	Hamal	328 45.6	N 23 16.6
	16	50 03.4	26 30.3	23.9	313 09.1	03.6	108 20.0	28.1	110 44.9	40.9	Kaus Aust.	84 36.3	S 34 24.1
	17	65 05.9	41 32.2	24.5	328 10.7	03.5	123 22.0	28.1	125 47.1	40.9			
	18	80 08.4	56 34.1	N16 25.1	343 12.2	N26 03.4	138 24.0	S20 28.0	140 49.4	S20 40.9	Kochab	137 17.7	N 74 18.7
	19	95 10.8	71 35.9	25.7	358 13.8	03.3	153 26.0	27.9	155 51.6	40.8	Markab	14 18.0	N 14 59.6
	20	110 13.3	86 37.8	26.3	13 15.4	03.2	168 28.0	27.8	170 53.8	40.8	Menkar	314 56.6	N 3 56.1
	21	125 15.8	101 39.7	.. 26.9	28 16.9	.. 03.1	183 29.9	.. 27.7	185 56.1	.. 40.8	Menkent	148 53.9	S 36 10.7
	22	140 18.2	116 41.6	27.5	43 18.5	03.0	198 31.9	27.6	200 58.3	40.7	Miaplacidus	221 47.2	S 69 33.7
	23	155 20.7	131 43.5	28.1	58 20.1	02.9	213 33.9	27.5	216 00.6	40.7			
MONDAY	13 00	170 23.1	146 45.3	N16 28.6	73 21.7	N26 02.8	228 35.9	S20 27.4	231 02.8	S20 40.6	Mirfak	309 37.2	N 49 43.5
	01	185 25.6	161 47.2	29.2	88 23.2	02.7	243 37.9	27.3	246 05.1	40.6	Nunki	76 47.4	S 26 20.7
	02	200 28.1	176 49.1	29.8	103 24.8	02.7	258 39.9	27.2	261 07.3	40.6	Peacock	54 21.9	S 56 51.5
	03	215 30.5	191 51.0	.. 30.4	118 26.4	.. 02.6	273 41.8	.. 27.1	276 09.5	.. 40.5	Pollux	244 15.8	N 28 07.2
	04	230 33.0	206 52.9	31.0	133 27.9	02.5	288 43.8	27.1	291 11.8	40.5	Procyon	245 40.9	N 5 19.3
	05	245 35.5	221 54.8	31.5	148 29.5	02.4	303 45.8	27.0	306 14.0	40.5			
	06	260 37.9	236 56.8	N16 32.1	163 31.1	N26 02.3	318 47.8	S20 26.9	321 16.3	S20 40.4	Rasalhague	96 43.1	N 12 35.1
	07	275 40.4	251 58.7	32.7	178 32.6	02.2	333 49.8	26.8	336 18.5	40.4	Regulus	208 25.2	N 12 09.3
	08	290 42.9	267 00.6	33.3	193 34.2	02.1	348 51.8	26.7	351 20.8	40.3	Rigel	281 50.0	S 8 15.0
	09	305 45.3	282 02.5	.. 33.8	208 35.7	.. 02.0	3 53.7	.. 26.6	6 23.0	.. 40.3	Rigel Kent.	140 45.3	S 60 40.3
	10	320 47.8	297 04.4	34.4	223 37.3	01.9	18 55.7	26.5	21 25.3	40.3	Sabir	102 57.8	S 15 40.6
	11	335 50.3	312 06.4	35.0	238 38.9	01.8	33 57.7	26.4	36 27.5	40.2			
	12	350 52.7	327 08.3	N16 35.5	253 40.4	N26 01.7	48 59.7	S20 26.3	51 29.7	S20 40.2	Schedar	350 26.1	N 56 19.4
	13	5 55.2	342 10.2	36.1	268 42.0	01.6	64 01.7	26.2	66 32.0	40.2	Shaula	97 15.6	S 37 04.4
	14	20 57.6	357 12.2	36.6	283 43.6	01.6	79 03.7	26.1	81 34.2	40.1	Sirius	259 08.5	S 16 40.0
	15	36 00.1	12 14.1	.. 37.2	298 45.1	.. 01.5	94 05.6	.. 26.1	96 36.5	.. 40.1	Spica	159 12.6	S 10 57.6
	16	51 02.6	27 16.0	37.8	313 46.7	01.4	109 07.6	26.0	111 38.7	40.0	Suhail	223 21.1	S 43 16.8
	17	66 05.0	42 18.0	38.3	328 48.2	01.3	124 09.6	25.9	126 41.0	40.0			
	18	81 07.5	57 19.9	N16 38.9	343 49.8	N26 01.2	139 11.6	S20 25.8	141 43.2	S20 40.0	Vega	81 05.8	N 38 44.6
	19	96 10.0	72 21.9	39.4	358 51.3	01.1	154 13.6	25.7	156 45.5	39.9	Zuben'ubi	137.4.0	S 15 52.8
	20	111 12.4	87 23.8	40.0	13 52.9	01.0	169 15.6	25.6	171 47.7	39.9			
	21	126 14.9	102 25.8	.. 40.5	28 54.5	.. 00.9	184 17.6	.. 25.5	186 50.0	.. 39.9			
	22	141 17.4	117 27.8	41.1	43 56.0	00.8	199 19.5	25.4	201 52.2	39.8	Venus	336 36.9	14 14
	23	156 19.8	132 29.7	41.6	58 57.6	00.7	214 21.5	25.3	216 54.4	39.8	Mars	263 19.8	19 07
											Jupiter	58 24.3	8 48
											Saturn	60 45.0	8 38

Mer. Pass. 12 40.3

v 1.9 d 0.6

v 1.6 d 0.1

v 2.0 d 0.1

v 2.2 d 0.0

v 2.2 d 0.0

Mer. Pass. 14 14

G.M.T.		SUN		MOON						Lat.	Twilight		Sun-rise	Moonrise							
		G.H.A.	Dec.	G.H.A.	<i>v</i>	Dec.	<i>d</i>	H.P.	Naut.		Civil	11		12	13	14					
d	h	°	'	°	'	°	'	°	'	°	h	m	h	m	h	m	h	m	h	m	
11	00	177 26.2	S 3 53.4	256 45.2	6.3	S 18 39.6	0.9	59.1	N 72	04 13	05 34	06 41	05 46	06 27	06 42	06 47	06 47	06 47	06 47	06 47	
	01	192 26.4	52.4	271 10.5	6.2	S 18 40.5	0.8	59.1	68	04 33	05 39	06 35	04 55	05 44	06 11	06 27	06 27	06 27	06 27	06 27	
	02	207 26.5	51.4	285 35.7	6.3	S 18 41.3	0.7	59.2	66	04 41	05 41	06 32	04 24	05 15	05 49	06 11	06 11	06 11	06 11	06 11	
	03	222 26.7	50.4	300 01.0	6.2	S 18 42.0	0.5	59.2	64	04 47	05 43	06 30	04 00	04 53	05 31	05 58	05 58	05 58	05 58	05 58	
	04	237 26.9	49.4	314 26.2	6.1	S 18 42.5	0.5	59.2	62	04 52	05 44	06 28	03 41	04 35	05 16	05 47	05 47	05 47	05 47	05 47	
	05	252 27.0	48.5	328 51.3	6.1	S 18 43.0	0.3	59.2	60	04 57	05 45	06 27	03 26	04 20	05 04	05 37	05 37	05 37	05 37	05 37	
	06	267 27.2	S 3 47.5	343 16.4	6.1	S 18 43.3	0.2	59.3	N 58	05 01	05 46	06 25	03 13	04 08	04 53	05 28	05 28	05 28	05 28	05 28	
	07	282 27.4	46.5	357 41.5	6.1	S 18 43.5	0.0	59.3	56	05 04	05 47	06 24	03 02	03 57	04 43	05 21	05 21	05 21	05 21	05 21	
	08	297 27.5	45.5	12 06.6	6.0	S 18 43.5	0.0	59.3	54	05 07	05 48	06 23	02 52	03 48	04 35	05 14	05 14	05 14	05 14	05 14	
	09	312 27.7	44.5	26 31.6	6.0	S 18 43.5	0.2	59.3	52	05 09	05 48	06 22	02 43	03 39	04 27	05 08	05 08	05 08	05 08	05 08	
	10	327 27.9	43.5	40 56.6	6.0	S 18 43.3	0.3	59.4	50	05 11	05 49	06 21	02 35	03 31	04 21	05 03	05 03	05 03	05 03	05 03	
	11	342 28.0	42.6	55 21.6	5.9	S 18 43.0	0.5	59.4	45	05 16	05 49	06 19	02 18	03 15	04 06	04 51	04 51	04 51	04 51	04 51	
	12	357 28.2	S 3 41.6	69 46.5	5.9	S 18 42.5	0.5	59.4	N 40	05 19	05 50	06 17	02 05	03 02	03 54	04 42	04 42	04 42	04 42	04 42	
	13	12 28.4	40.6	84 11.4	5.9	S 18 42.0	0.7	59.4	35	05 21	05 50	06 15	01 53	02 50	03 44	04 33	04 33	04 33	04 33	04 33	
	14	27 28.5	39.6	98 36.3	5.9	S 18 41.3	0.8	59.5	30	05 22	05 50	06 14	01 43	02 41	03 35	04 26	04 26	04 26	04 26	04 26	
	15	42 28.7	38.6	113 01.2	5.8	S 18 40.5	0.9	59.5	20	05 24	05 49	06 11	01 25	02 23	03 20	04 13	04 13	04 13	04 13	04 13	
	16	57 28.9	37.7	127 26.0	5.8	S 18 39.6	1.1	59.5	N 10	05 24	05 48	06 09	01 10	02 08	03 06	04 02	04 02	04 02	04 02	04 02	
	17	72 29.0	36.7	141 50.8	5.8	S 18 38.5	1.2	59.5	0	05 22	05 46	06 07	00 56	01 54	02 53	03 52	03 52	03 52	03 52	03 52	
	18	87 29.2	S 3 35.7	156 15.6	5.7	S 18 37.3	1.3	59.5	S 10	05 19	05 43	06 04	00 41	01 40	02 40	03 41	03 41	03 41	03 41	03 41	
	19	102 29.3	34.7	170 40.3	5.8	S 18 36.0	1.4	59.6	20	05 14	05 39	06 01	00 26	01 25	02 27	03 30	03 30	03 30	03 30	03 30	
	20	117 29.5	33.7	185 05.1	5.7	S 18 34.6	1.6	59.6	30	05 06	05 34	05 58	00 09	01 08	02 11	03 17	03 17	03 17	03 17	03 17	
	21	132 29.7	32.7	199 29.8	5.7	S 18 33.0	1.7	59.6	35	05 01	05 31	05 56	24 58	00 58	02 02	03 10	03 10	03 10	03 10	03 10	
	22	147 29.8	31.8	213 54.5	5.7	S 18 31.3	1.8	59.6	40	04 55	05 27	05 54	24 47	00 47	01 52	03 01	03 01	03 01	03 01	03 01	
23	162 30.0	30.8	228 19.2	5.7	S 18 29.5	1.9	59.7	45	04 47	05 22	05 52	24 33	00 33	01 40	02 51	02 51	02 51	02 51	02 51		
12	177 30.2	S 3 29.8	242 43.9	5.6	S 18 27.6	2.1	59.7	S 50	04 37	05 16	05 48	24 17	00 17	01 25	02 39	02 39	02 39	02 39	02 39		
01	192 30.3	28.8	257 08.5	5.7	S 18 25.5	2.2	59.7	52	04 32	05 13	05 47	24 09	00 09	01 18	02 33	02 33	02 33	02 33	02 33		
02	207 30.5	27.8	271 33.2	5.6	S 18 23.3	2.3	59.7	54	04 26	05 10	05 46	24 01	00 01	01 10	02 27	02 27	02 27	02 27	02 27		
03	222 30.7	26.9	285 57.8	5.6	S 18 21.0	2.5	59.7	56	04 20	05 06	05 44	23 51	25 02	01 02	02 20	02 20	02 20	02 20	02 20		
04	237 30.8	25.9	300 22.4	5.6	S 18 18.5	2.5	59.8	58	04 13	05 02	05 42	23 40	24 52	00 52	02 13	02 13	02 13	02 13	02 13		
05	252 31.0	24.9	314 47.0	5.6	S 18 16.0	2.7	59.8	S 60	04 05	04 57	05 40	23 28	24 41	00 41	02 04	02 04	02 04	02 04	02 04		
06	267 31.2	S 3 23.9	329 11.6	5.6	S 18 13.3	2.8	59.8	Lat.		Sun-set		Twilight		Moonset							
07	282 31.3	22.9	343 36.2	5.6	S 18 10.5	3.0	59.8			Civil		Naut.		11		12		13		14	
08	297 31.5	21.9	358 00.8	5.6	S 18 07.5	3.1	59.8														
09	312 31.7	21.0	12 25.4	5.6	S 18 04.4	3.2	59.9														
10	327 31.9	20.0	26 50.0	5.5	S 18 01.2	3.3	59.9														
11	342 32.0	19.0	41 14.5	5.6	S 17 57.9	3.5	59.9														
12	357 32.2	S 3 18.0	55 39.1	5.6	S 17 54.4	3.5	59.9	N 72	17 41	18 49	20 11	08 33	09 55	11 43	13 39	13 39	13 39	13 39	13 39		
13	12 32.4	17.0	70 03.7	5.5	S 17 50.9	3.7	59.9	N 70	17 44	18 45	19 59	08 33	09 55	11 43	13 39	13 39	13 39	13 39	13 39		
14	27 32.5	16.0	84 28.2	5.6	S 17 47.2	3.9	60.0	68	17 47	18 42	19 49	09 23	10 37	12 12	13 58	13 58	13 58	13 58	13 58		
15	42 32.7	15.1	98 52.8	5.6	S 17 43.3	3.9	60.0	66	17 49	18 40	19 41	09 55	11 06	12 34	14 13	14 13	14 13	14 13	14 13		
16	57 32.9	14.1	113 17.4	5.5	S 17 39.4	4.1	60.0	64	17 51	18 39	19 35	10 19	11 28	12 52	14 25	14 25	14 25	14 25	14 25		
17	72 33.0	13.1	127 41.9	5.6	S 17 35.3	4.2	60.0	62	17 53	18 37	19 29	10 37	11 45	13 06	14 35	14 35	14 35	14 35	14 35		
18	87 33.2	S 3 12.1	142 06.5	5.6	S 17 31.1	4.3	60.0	60	17 54	18 36	19 25	10 53	12 00	13 18	14 44	14 44	14 44	14 44	14 44		
19	102 33.4	11.1	156 31.1	5.6	S 17 26.8	4.5	60.1	N 58	17 56	18 35	19 21	11 06	12 12	13 28	14 52	14 52	14 52	14 52	14 52		
20	117 33.5	10.1	170 55.7	5.6	S 17 22.3	4.5	60.1	56	17 57	18 34	19 17	11 17	12 22	13 38	14 59	14 59	14 59	14 59	14 59		
21	132 33.7	09.2	185 20.3	5.6	S 17 17.8	4.7	60.1	54	17 58	18 33	19 14	11 27	12 32	13 46	15 05	15 05	15 05	15 05	15 05		
22	147 33.9	08.2	199 44.9	5.6	S 17 13.1	4.8	60.1	52	17 59	18 32	19 12	11 36	12 40	13 53	15 10	15 10	15 10	15 10	15 10		
23	162 34.0	07.2	214 09.5	5.6	S 17 08.3	4.9	60.1	50	18 00	18 32	19 10	11 44	12 48	13 59	15 15	15 15	15 15	15 15	15 15		
13	177 34.2	S 3 06.2	228 34.1	5.6	S 17 03.4	5.1	60.1	45	18 02	18 31	19 05	12 01	13 04	14 13	15 26	15 26	15 26	15 26	15 26		
01	192 34.4	05.2	242 58.7	5.7	S 16 58.3	5.1	60.2	N 40	18 03	18 30	19 02	12 14	13 17	14 24	15 35	15 35	15 35	15 35	15 35		
02	207 34.5	04.2	257 23.4	5.6	S 16 53.2	5.3	60.2	35	18 05	18 30	19 00	12 26	13 28	14 34	15 42	15 42	15 42	15 42	15 42		
03	222 34.7	03.2	271 48.0	5.7	S 16 47.9	5.4	60.2	30	18 06	18 30	18 58	12 36	13 37	14 42	15 49	15 49	15 49	15 49	15 49		
04	237 34.9	02.3	286 12.7	5.7	S 16 42.5	5.6	60.2	20	18 09	18 31	18 56	12 54	13 54	14 57	16 00	16 00	16 00	16 00	16 00		
05	252 35.0	01.3	300 37.4	5.7	S 16 36.9	5.6	60.2	N 10	18 11	18 32	18 56	13 09	14 09	15 09	16 10	16 10	16 10	16 10	16 10		
06	267 35.2	S 3 00.3	315 02.1	5.7	S 16 31.3	5.7	60.2	S 10	18 15	18 37	19 01	13 38	14 36	15 33	16 28	16 28	16 28	16 28	16 28		
07	282 35.4	2 59.3	329 26.8	5.7	S 16 25.6	5.9	60.2	20	18 18	18 40	19 06	13 53	14 50	15 45	16 38	16 38	16 38	16 38	16 38		

G.M.T.		ARIES		VENUS -4.3		MARS +0.6		JUPITER -1.6		SATURN +0.9		STARS			
		G.H.A.		G.H.A.	Dec.	G.H.A.	Dec.	G.H.A.	Dec.	G.H.A.	Dec.	Name	S.H.A.	Dec.	
TUESDAY	d														
	h														
	14 00	171 22.3	147 31.7	N 16 42.2	73 59.1	N 26 00.6	229 23.5	S 20 25.2	231 56.7	S 20 39.7	Acamar	315 48.6	S 40 27.9		
	01	186 24.8	162 33.7	42.7	89 00.7	00.5	244 25.5	25.2	246 58.9	39.7	Achernar	335 56.7	S 57 26.3		
	02	201 27.2	177 35.6	43.3	104 02.2	00.4	259 27.5	25.1	262 01.2	39.7	Acrux	173 52.7	S 62 53.0		
	03	216 29.7	192 37.6	.. 43.8	119 03.8	.. 00.3	274 29.5	.. 25.0	277 03.4	.. 39.6	Adhara	255 43.4	S 28 55.5		
	04	231 32.1	207 39.6	44.3	134 05.3	00.3	289 31.5	24.9	292 05.7	39.6	Aldebaran	291 34.8	N 16 25.8		
	05	246 34.6	222 41.6	44.9	149 06.9	00.2	304 33.5	24.8	307 07.9	39.5					
	06	261 37.1	237 43.6	N 16 45.4	164 08.4	N 26 00.0	319 35.4	S 20 24.7	322 10.2	S 20 39.5	Alioth	166 54.8	N 56 10.1		
	07	276 39.5	252 45.6	45.9	179 10.0	26 00.0	334 37.4	24.6	337 12.4	39.5	Alkaid	153 29.6	N 49 30.3		
	08	291 42.0	267 47.6	46.5	194 11.5	25 59.9	349 39.4	24.5	352 14.7	39.4	Al Na'ir	28 33.7	S 47 09.9		
	09	306 44.5	282 49.6	.. 47.0	209 13.1	.. 59.8	4 41.4	.. 24.4	7 16.9	.. 39.4	Alnilam	276 26.5	S 1 13.8		
	10	321 46.9	297 51.6	47.5	224 14.6	59.7	19 43.4	24.3	22 19.2	39.4	Alphard	218 34.6	S 8 29.6		
	11	336 49.4	312 53.6	48.1	239 16.2	59.6	34 45.4	24.3	37 21.4	39.3					
	12	351 51.9	327 55.6	N 16 48.6	254 17.7	N 25 59.5	49 47.4	S 20 24.2	52 23.7	S 20 39.3	Alphecca	126 44.3	N 26 50.5		
	13	6 54.3	342 57.6	49.1	269 19.2	59.4	64 49.4	24.1	67 25.9	39.3	Alpheratz	358 24.7	N 28 52.4		
	14	21 56.8	357 59.6	49.6	284 20.8	59.3	79 51.4	24.0	82 28.2	39.2	Altair	62 46.9	N 8 45.8		
	15	36 59.3	13 01.6	.. 50.2	299 22.3	.. 59.2	94 53.4	.. 23.9	97 30.4	.. 39.2	Ankaa	353 55.1	S 42 31.2		
	16	52 01.7	28 03.7	50.7	314 23.9	59.1	109 55.3	23.8	112 32.6	39.1	Antares	113 14.6	S 26 20.7		
	17	67 04.2	43 05.7	51.2	329 25.4	59.0	124 57.3	23.7	127 34.9	39.1					
	18	82 06.6	58 07.7	N 16 51.7	344 27.0	N 25 58.9	139 59.3	S 20 23.6	142 37.1	S 20 39.1	Arcturus	146 31.5	N 19 22.9		
	19	97 09.1	73 09.7	52.2	359 28.5	58.8	155 01.3	23.5	157 39.4	39.0	Atria	108 51.8	S 68 57.2		
	20	112 11.6	88 11.8	52.8	14 30.0	58.7	170 03.3	23.4	172 41.6	39.0	Avior	234 33.7	S 59 23.4		
	21	127 14.0	103 13.8	.. 53.3	29 31.6	.. 58.6	185 05.3	.. 23.3	187 43.9	.. 39.0	Bellatrix	279 14.4	N 6 18.7		
22	142 16.5	118 15.9	53.8	44 33.1	58.5	200 07.3	23.3	202 46.1	38.9	Betelgeuse	271 44.0	N 7 23.8			
23	157 19.0	133 17.9	54.3	59 34.7	58.5	215 09.3	23.2	217 48.4	38.9						
WEDNESDAY	15 00	172 21.4	148 19.9	N 16 54.8	74 36.2	N 25 58.4	230 11.3	S 20 23.1	232 50.6	S 20 38.8	Canopus	264 13.6	S 52 40.9		
	01	187 23.9	163 22.0	55.3	89 37.7	58.3	245 13.3	23.0	247 52.9	38.8	Capella	281 32.9	N 45 57.6		
	02	202 26.4	178 24.1	55.8	104 39.3	58.2	260 15.3	22.9	262 55.1	38.8	Deneb	49 58.7	N 45 08.3		
	03	217 28.8	193 26.1	.. 56.3	119 40.8	.. 58.1	275 17.2	.. 22.8	277 57.4	.. 38.7	Denebola	183 13.6	N 14 47.2		
	04	232 31.3	208 28.2	56.8	134 42.3	58.0	290 19.2	22.7	292 59.6	38.7	Diphda	349 35.8	S 18 12.2		
	05	247 33.7	223 30.3	57.3	149 43.9	57.9	305 21.2	22.6	308 01.9	38.7					
	06	262 36.2	238 32.3	N 16 57.8	164 45.4	N 25 57.8	320 23.2	S 20 22.5	323 04.1	S 20 38.6	Dubhe	194 39.5	N 61 57.6		
	07	277 38.7	253 34.4	58.3	179 46.9	57.7	335 25.2	22.4	338 06.4	38.6	Elmath	279 02.6	N 28 34.5		
	08	292 41.1	268 36.5	58.8	194 48.5	57.6	350 27.2	22.4	353 08.6	38.6	Eltanin	91 04.6	N 51 29.4		
	09	307 43.6	283 38.6	.. 59.3	209 50.0	.. 57.5	5 29.2	.. 22.3	8 10.9	.. 38.5	Enif	34 26.2	N 9 41.7		
	10	322 46.1	298 40.6	16 59.8	224 51.5	57.4	20 31.2	22.2	23 13.1	38.5	Fomalhaut	16 07.9	S 29 49.8		
	11	337 48.5	313 42.7	17 00.3	239 53.0	57.3	35 33.2	22.1	38 15.4	38.4					
	12	352 51.0	328 44.8	N 17 00.8	254 54.6	N 25 57.2	50 35.2	S 20 22.0	53 17.6	S 20 38.4	Gacrux	172 44.3	S 56 53.7		
	13	7 53.5	343 46.9	01.2	269 56.1	57.1	65 37.2	21.9	68 19.9	38.4	Gienah	176 32.6	S 17 19.7		
	14	22 55.9	358 49.0	01.7	284 57.6	57.0	80 39.2	21.8	83 22.1	38.3	Hadar	149 43.4	S 60 11.0		
	15	37 58.4	13 51.1	.. 02.2	299 59.2	.. 56.9	95 41.2	.. 21.7	98 24.4	.. 38.3	Hamal	328 45.6	N 23 16.6		
	16	53 00.9	28 53.2	02.7	315 00.7	56.8	110 43.2	21.6	113 26.6	38.3	Kaus Aust.	84 36.3	S 34 24.1		
	17	68 03.3	43 55.3	03.2	330 02.2	56.7	125 45.1	21.5	128 28.9	38.2					
	18	83 05.8	58 57.4	N 17 03.7	345 03.7	N 25 56.6	140 47.1	S 20 21.5	143 31.2	S 20 38.2	Kochab	137 17.6	N 74 18.7		
	19	98 08.2	73 59.5	04.1	0 05.3	56.5	155 49.1	21.4	158 33.4	38.1	Markab	14 18.0	N 14 59.6		
	20	113 10.7	89 01.7	04.6	15 06.8	56.4	170 51.1	21.3	173 35.7	38.1	Menkar	314 56.6	N 3 56.1		
	21	128 13.2	104 03.8	.. 05.1	30 08.3	.. 56.3	185 53.1	.. 21.2	188 37.9	.. 38.1	Menkent	148 53.9	S 36 10.7		
	22	143 15.6	119 05.9	05.6	45 09.8	56.2	200 55.1	21.1	203 40.2	38.0	Miaplacidus	221 47.3	S 69 33.7		
	23	158 18.1	134 08.0	06.0	60 11.3	56.1	215 57.1	21.0	218 42.4	38.0					
THURSDAY	16 00	173 20.6	149 10.2	N 17 06.5	75 12.9	N 25 56.0	230 59.1	S 20 20.9	233 44.7	S 20 38.0	Mirfak	309 37.2	N 49 43.5		
	01	188 23.0	164 12.3	07.0	90 14.4	55.9	246 01.1	20.8	248 46.9	37.9	Nunki	76 47.4	S 26 20.7		
	02	203 25.5	179 14.5	07.4	105 15.9	55.8	261 03.1	20.7	263 49.2	37.9	Peacock	54 21.8	S 56 51.5		
	03	218 28.0	194 16.6	.. 07.9	120 17.4	.. 55.7	276 05.1	.. 20.6	278 51.4	.. 37.9	Pollux	244 15.8	N 28 07.2		
	04	233 30.4	209 18.7	08.3	135 18.9	55.6	291 07.1	20.5	293 53.7	37.8	Procyon	245 40.9	N 5 19.3		
	05	248 32.9	224 20.9	08.8	150 20.5	55.5	306 09.1	20.6	308 55.9	37.8					
	06	263 35.3	239 23.0	N 17 09.3	165 22.0	N 25 55.4	321 11.1	S 20 20.4	323 58.2	S 20 37.7	Rasalhague	96 43.1	N 12 35.1		
	07	278 37.8	254 25.2	09.7	180 23.5	55.3	336 13.1	20.3	339 00.4	37.7	Regulus	208 25.2	N 12 09.3		
	08	293 40.3	269 27.4	10.2	195 25.0	55.2	351 15.1	20.2	354 02.7	37.7	Rigel	281 50.0	S 8 15.0		
	09	308 42.7	284 29.5	.. 10.6	210 26.5	.. 55.1	6 17.1	.. 20.1	9 04.9	.. 37.6	Rigel Kent.	140 45.2	S 60 40.3		
	10	323 45.2	299 31.7	11.1	225 28.0	55.0	21 19.1	20.0	24 07.2	37.6	Sabik	102 57.8	S 15 40.6		
	11	338 47.7	314 33.9	11.5	240 29.6	54.9	36 21.1	19.9	39 09.5	37.6					
	12	353 50.1	329 36.0	N 17 12.0	255 31.1	N 25 54.8	51 23.1	S 20 19.8	54 11.7	S 20 37.5	Schedar	350 26.1	N 56 19.4		
	13	8 52.6	344 38.2	12.4	270 32.6	54.7	66 25.1	19.7	69 14.0	37.5	Shaula	97 15.6	S 37 04.4		
	14	23 55.1	359 40.4	12.9	285 34.1	54.6	81 27.1	19.7	84 16.2	37.5	Sirius	259 08.5	S 16 40.0		
	15	38 57.5	14 42.6	.. 13.3	300 35.6	.. 54.5	96 29.1	.. 19.6	99 18.5	.. 37.4	Spica	159 12.6	S 10 57.6		
	16	54 00.0	29 44.8	13.7	315 37.1	54.4	111 31.1	19.5	114 20.7	37.4	Suhail	223 21.1	S 43 16.8		
	17	69 02.5	44 47.0	14.2	330 38.6	54.3	126 33.1	19.4	129 23.0	37.3					
	18	84 04.9	59 49.2	N 17 14.6	345 40.1	N 25 54.2	141 35.1	S 20 19.3	144 25.2	S 20 37.3	Vega	81 05.8	N 38 44.6		
	19	99 07.4	74 51.4	15.1	0 41.6	54.1	156 37.1	19.2	159 27.5	37.3	Zuben'ubi	137 49.0	S 15 52.8		
	20	114 09.8	89 53.6	15.5	15 43.2	54.0	171 39.1	19.1	174 29.7	37.2					
	21	129 12.3	104 55.8	.. 15.9	30 44.7	.. 53.9	186 41.1	.. 19.0	189 32.0	.. 37.2					
	22	144 14.8	119 58.0	16.3	45 46.2	53.8	201 43.1	18.9	204 34.3	37.2					
	23	159 17.2	135 00.2	16.8	60 47.7	53.7	216 45.1	18.8	219 36.5	37.1					
Mer. Pass. 12 28.5		v 2.1 d 0.5			v 1.5 d 0.1			v 2.0 d 0.1			v 2.3 d 0.0			S.H.A. Mer. Pass. h m	
														Venus 335 58.5 14 05	
														Mars 262 14.8 19 00	
														Jupiter 57 49.9 8 38	
														Saturn 60 29.2 8 27	

G.M.T.	SUN				MOON				Lat.	Twilight		Sun-rise	Moonrise				
	G.H.A.		Dec.	°	G.H.A.		Dec.	d		H.P.	Naut.		Civil	14	15	16	17
	°	'			°	'											
d h	°	'	°	'	°	'	°	'	°	h	m	h	m	h	m	h	m
TUESDAY	14 00	177 38.3	S 2 42.6	214 30.4	6.1	S 14 30.7	7.7	60.4	N 72	03 55	05 18	06 25	07 13	07 04	06 57	06 50	
	01	192 38.5	41.6	228 55.5	6.2	14 23.0	7.8	60.4	N 70	04 09	05 23	06 24	06 47	06 49	06 49	06 49	
	02	207 38.6	40.6	243 20.7	6.3	14 15.2	7.9	60.4	68	04 20	05 27	06 22	06 27	06 36	06 43	06 48	
	03	222 38.8	39.6	257 46.0	6.2	14 07.3	8.0	60.4	66	04 29	05 30	06 21	06 11	06 26	06 37	06 47	
	04	237 39.0	38.6	272 11.2	6.3	13 59.3	8.1	60.4	64	04 36	05 32	06 20	05 58	06 17	06 33	06 46	
	05	252 39.2	37.6	286 36.5	6.3	13 51.2	8.2	60.5	62	04 42	05 35	06 19	05 47	06 10	06 29	06 45	
	06	267 39.3	S 2 36.6	301 01.8	6.4	S 13 43.0	8.3	60.5	60	04 47	05 36	06 18	05 37	06 03	06 25	06 45	
	07	282 39.5	35.7	315 27.2	6.4	13 34.7	8.4	60.5	N 58	04 52	05 38	06 17	05 28	05 58	06 22	06 44	
	08	297 39.7	34.7	329 52.6	6.4	13 26.3	8.5	60.5	56	04 56	05 39	06 16	05 21	05 52	06 19	06 43	
	09	312 39.8	33.7	344 18.0	6.5	13 17.8	8.5	60.5	54	04 59	05 40	06 16	05 14	05 48	06 17	06 43	
	10	327 40.0	32.7	358 43.5	6.5	13 09.3	8.7	60.5	52	05 02	05 41	06 15	05 08	05 43	06 14	06 43	
	11	342 40.2	31.7	13 09.0	6.6	13 00.6	8.7	60.5	50	05 05	05 42	06 14	05 03	05 40	06 12	06 42	
	12	357 40.4	S 2 30.7	27 34.6	6.5	S 12 51.9	8.9	60.5	45	05 10	05 44	06 13	04 51	05 31	06 08	06 41	
	13	12 40.5	29.7	42 00.1	6.7	12 43.0	8.9	60.5	N 40	05 14	05 45	06 12	04 42	05 24	06 04	06 41	
	14	27 40.7	28.8	56 25.8	6.6	12 34.1	9.0	60.5	35	05 17	05 46	06 11	04 33	05 19	06 01	06 40	
	15	42 40.9	27.8	70 51.4	6.7	12 25.1	9.1	60.5	30	05 19	05 46	06 10	04 26	05 13	05 58	06 40	
	16	57 41.1	26.8	85 17.1	6.7	12 16.0	9.1	60.5	20	05 21	05 47	06 09	04 13	05 04	05 53	06 39	
	17	72 41.2	25.8	99 42.8	6.8	12 06.9	9.3	60.5	N 10	05 22	05 46	06 07	04 02	04 56	05 48	06 38	
	18	87 41.4	S 2 24.8	114 08.6	6.8	S 11 57.6	9.3	60.5	0	05 21	05 45	06 06	03 52	04 49	05 44	06 37	
	19	102 41.6	23.8	128 34.4	6.9	11 48.3	9.4	60.5	S 10	05 19	05 43	06 04	03 41	04 41	05 40	06 37	
	20	117 41.8	22.8	143 00.3	6.9	11 38.9	9.5	60.5	20	05 15	05 40	06 02	03 30	04 33	05 35	06 36	
	21	132 41.9	21.8	157 26.2	6.9	11 29.4	9.6	60.5	30	05 08	05 36	06 00	03 17	04 24	05 30	06 35	
	22	147 42.1	20.9	171 52.1	7.0	11 19.8	9.6	60.5	35	05 04	05 33	05 59	03 10	04 18	05 27	06 34	
23	162 42.3	19.9	186 18.1	7.0	11 10.2	9.7	60.5	40	04 58	05 30	05 57	03 01	04 12	05 24	06 34		
WEDNESDAY	15 00	177 42.5	S 2 18.9	200 44.1	7.0	S 11 00.5	9.8	60.5	45	04 51	05 26	05 55	02 51	04 05	05 20	06 33	
	01	192 42.6	17.9	215 10.1	7.1	10 50.7	9.9	60.5	S 50	04 42	05 21	05 53	02 39	03 57	05 15	06 33	
	02	207 42.8	16.9	229 36.2	7.2	10 40.8	9.9	60.5	52	04 38	05 18	05 52	02 33	03 53	05 13	06 32	
	03	222 43.0	15.9	244 02.4	7.2	10 30.9	10.0	60.5	54	04 33	05 16	05 51	02 27	03 48	05 10	06 32	
	04	237 43.1	14.9	258 28.6	7.2	10 20.9	10.1	60.5	56	04 27	05 13	05 50	02 20	03 44	05 08	06 32	
	05	252 43.3	14.0	272 54.8	7.3	10 10.8	10.1	60.5	58	04 21	05 09	05 49	02 13	03 38	05 05	06 31	
	06	267 43.5	S 2 13.0	287 21.1	7.3	S 10 00.7	10.2	60.5	S 60	04 13	05 05	05 47	02 04	03 32	05 02	06 31	
	07	282 43.7	12.0	301 47.4	7.3	9 50.5	10.2	60.5									
	08	297 43.9	11.0	316 13.7	7.4	9 40.3	10.3	60.5	Lat.	Sun-set	Twilight		Moonset				
	09	312 44.0	10.0	330 40.1	7.4	9 30.0	10.4	60.4			Civil	Naut.	14	15	16	17	
	10	327 44.2	09.0	345 06.5	7.5	9 19.6	10.5	60.4	°	h m	h m	h m	h m	h m	h m	h m	
	11	342 44.4	08.0	359 33.0	7.5	9 09.1	10.4	60.4	N 72	17 55	19 03	20 27	13 14	15 21	17 22	19 19	
	12	357 44.6	S 2 07.0	13 59.5	7.6	S 8 58.7	10.6	60.4	N 70	17 57	18 58	20 13	13 39	15 35	17 28	19 17	
	13	12 44.7	06.1	28 26.1	7.6	8 48.1	10.6	60.4	68	17 58	18 53	20 01	13 58	15 46	17 32	19 16	
	14	27 44.9	05.1	42 52.7	7.6	8 37.5	10.6	60.4	66	17 59	18 50	19 52	14 13	15 55	17 36	19 15	
	15	42 45.1	04.1	57 19.3	7.7	8 26.9	10.7	60.4	64	18 00	18 47	19 44	14 25	16 02	17 39	19 14	
	16	57 45.3	03.1	71 46.0	7.8	8 16.2	10.8	60.4	62	18 01	18 45	19 38	14 35	16 08	17 41	19 13	
	17	72 45.4	02.1	86 12.8	7.7	8 05.4	10.8	60.4	60	18 02	18 43	19 32	14 44	16 14	17 44	19 12	
	18	87 45.6	S 2 01.1	100 39.5	7.9	S 7 54.6	10.9	60.4	N 58	18 02	18 42	19 28	14 52	16 19	17 46	19 11	
	19	102 45.8	2 00.1	115 06.4	7.8	7 43.7	10.8	60.4	56	18 03	18 40	19 24	14 59	16 23	17 48	19 10	
	20	117 46.0	1 59.1	129 33.2	7.9	7 32.9	11.0	60.3	54	18 04	18 39	19 20	15 05	16 27	17 49	19 10	
	21	132 46.1	1 58.2	144 00.1	8.0	7 21.9	11.0	60.3	52	18 04	18 38	19 17	15 10	16 30	17 51	19 09	
	22	147 46.3	57.2	158 27.1	7.9	7 10.9	11.0	60.3	50	18 05	18 37	19 15	15 15	16 34	17 52	19 09	
23	162 46.5	56.2	172 54.0	8.1	6 59.9	11.1	60.3	45	18 06	18 35	19 09	15 26	16 41	17 55	19 08		
THURSDAY	16 00	177 46.7	S 1 55.2	187 21.1	8.0	S 6 48.8	11.1	60.3	N 40	18 07	18 34	19 05	15 35	16 46	17 57	19 07	
	01	192 46.8	54.2	201 48.1	8.1	6 37.7	11.1	60.3	35	18 07	18 33	19 02	15 42	16 51	17 59	19 06	
	02	207 47.0	53.2	216 15.2	8.2	6 26.6	11.2	60.3	30	18 08	18 32	19 00	15 49	16 55	18 01	19 06	
	03	222 47.2	52.2	230 42.4	8.2	6 15.4	11.2	60.3	20	18 10	18 32	18 57	16 00	17 03	18 04	19 04	
	04	237 47.4	51.2	245 09.6	8.2	6 04.2	11.2	60.2	N 10	18 11	18 32	18 56	16 10	17 09	18 07	19 03	
	05	252 47.6	50.3	259 36.8	8.3	5 53.0	11.3	60.2	0	18 12	18 33	18 57	16 19	17 15	18 09	19 02	
	06	267 47.7	S 1 49.3	274 04.1	8.3	S 5 41.7	11.3	60.2	S 10	18 14	18 35	18 59	16 28	17 21	18 12	19 01	
	07	282 47.9	48.3	288 31.4	8.4	5 30.4	11.4	60.2	20	18 15	18 38	19 03	16 38	17 27	18 14	19 00	
	08	297 48.1	47.3	302 58.8	8.4	5 19.0	11.3	60.2	30	18 17	18 41	19 09	16 49	17 34	18 17	18 59	
	09	312 48.3	46.3	317 26.2	8.4	5 07.7	11.4	60.2	35	18 19	18 44	19 14	16 55	17 38	18 19	18 58	
	10	327 48.4	45.3	331 53.6	8.5	4 56.3	11.4	60.1	40	18 20	18 47	19 19	17 02	17 43	18 21	18 57	
	11	342 48.6	44.3	346 21.1	8.5	4 44.9	11.4	60.1	45	18 22	18 51	19 26	17 10	17 48	18 23	18 56	
	12	357 48.8	S 1 43.3	0 48.6	8.6	S 4 33.5	11.5	60.1	S 50	18 24	18 56	19 35	17 20	17 54	18 25	18 55	
	13	12 49.0	42.3	15 16.2	8.5	4 22.0	11.5	60.1	52	18 25	18 58	19 39	17 24	17 57	18 26	18 54	
	14	27 49.1	41.4	29 43.7	8.7	4 10.5	11.5	60.1	54	18 26	19 01	19 44	17 29	18 00	18 28	18 54	
	15	42 49.3	40.4	44 11.4	8.7	3 59.0	11.5	60.1	56	18							

G.M.T.	ARIES			VENUS -4.2			MARS +0.6			JUPITER -1.6			SATURN +0.9			STARS		
	G.H.A.	G.H.A.	Dec.	G.H.A.	G.H.A.	Dec.	G.H.A.	G.H.A.	Dec.	G.H.A.	G.H.A.	Dec.	G.H.A.	G.H.A.	Dec.	Name	S.H.A.	Dec.
d h																		
17 00	174 19.7	150 02.4	N17 17.2	75 49.2	N25 53.6		231 47.1	S20 18.8		234 38.8	S20 37.1		Acamar	315 48.6	S 40 27.9			
01	189 22.2	165 04.6	17.6	90 50.7	53.5		246 49.1	18.7		249 41.0	37.1		Achernar	335 56.7	S 57 26.3			
02	204 24.6	180 06.9	18.0	105 52.2	53.4		261 51.1	18.6		264 43.3	37.0		Acrux	173 52.7	S 62 53.0			
03	219 27.1	195 09.1	18.5	120 53.7	53.3		276 53.1	18.5		279 45.5	37.0		Adhara	255 43.5	S 28 55.5			
04	234 29.6	210 11.3	18.9	135 55.2	53.2		291 55.1	18.4		294 47.8	36.9		Aldebaran	291 34.8	N 16 25.8			
05	249 32.0	225 13.6	19.3	150 56.7	53.1		306 57.1	18.3		309 50.0	36.9							
06	264 34.5	240 15.8	N17 19.7	165 58.2	N25 53.0		321 59.1	S20 18.2		324 52.3	S20 36.9		Alioth	166 54.8	N 56 10.1			
07	279 37.0	255 18.0	20.1	180 59.7	52.9		337 01.1	18.1		339 54.6	36.8		Alkaid	153 29.6	N 49 30.3			
08	294 39.4	270 20.3	20.5	196 01.2	52.8		352 03.1	18.0		354 56.8	36.8		Al Na'ir	28 33.7	S 47 09.0			
09	309 41.9	285 22.5	21.0	211 02.7	52.7		7 05.1	18.0		9 59.1	36.8		Alnilam	276 26.5	S 1 13.8			
10	324 44.3	300 24.8	21.4	226 04.2	52.6		22 07.1	17.9		25 01.3	36.7		Alphard	218 34.6	S 8 29.6			
11	339 46.8	315 27.1	21.8	241 05.7	52.5		37 09.1	17.8		40 03.6	36.7							
12	354 49.3	330 29.3	N17 22.2	256 07.2	N25 52.4		52 11.1	S20 17.7		55 05.8	S20 36.7		Alphecca	126 44.3	N 26 50.5			
13	9 51.7	345 31.6	22.6	271 08.7	52.3		67 13.1	17.6		70 08.1	36.6		Alpheratz	358 24.7	N 28 52.4			
14	24 54.2	0 33.9	23.0	286 10.2	52.2		82 15.1	17.5		85 10.4	36.6		Altair	62 46.9	N 8 45.8			
15	39 56.7	15 36.1	23.4	301 11.7	52.1		97 17.1	17.4		100 12.6	36.6		Ankaa	353 55.1	S 42 31.2			
16	54 59.1	30 38.4	23.8	316 13.2	52.0		112 19.1	17.3		115 14.9	36.5		Antares	113 14.6	S 26 20.7			
17	70 01.6	45 40.7	24.2	331 14.7	51.9		127 21.1	17.2		130 17.1	36.5							
18	85 04.1	60 43.0	N17 24.6	346 16.2	N25 51.8		142 23.1	S20 17.2		145 19.4	S20 36.4		Arcturus	146 31.5	N 19 22.9			
19	100 06.5	75 45.2	24.9	1 17.7	51.7		157 25.1	17.1		160 21.6	36.4		Atria	108 51.8	S 68 57.2			
20	115 09.0	90 47.5	25.3	16 19.2	51.6		172 27.1	17.0		175 23.9	36.4		Avior	234 33.7	S 59 23.4			
21	130 11.4	105 49.8	25.7	31 20.7	51.5		187 29.1	16.9		190 26.2	36.3		Bellatrix	279 14.4	N 6 18.7			
22	145 13.9	120 52.1	26.1	46 22.2	51.4		202 31.1	16.8		205 28.4	36.3		Betelgeuse	271 44.0	N 7 23.8			
23	160 16.4	135 54.4	26.5	61 23.6	51.2		217 33.1	16.7		220 30.7	36.3							
18 00	175 18.8	150 56.7	N17 26.9	76 25.1	N25 51.1		232 35.1	S20 16.6		235 32.9	S20 36.2		Canopus	264 13.6	S 52 40.9			
01	190 21.3	165 59.0	27.3	91 26.6	51.0		247 37.1	16.5		250 35.2	36.2		Capella	281 32.9	N 45 57.6			
02	205 23.8	181 01.4	27.6	106 28.1	50.9		262 39.2	16.4		265 37.4	36.2		Deneb	49 58.7	N 45 08.3			
03	220 26.2	196 03.7	28.0	121 29.6	50.8		277 41.2	16.3		280 39.7	36.1		Denebola	183 13.6	N 14 47.2			
04	235 28.7	211 06.0	28.4	136 31.1	50.7		292 43.2	16.3		295 42.0	36.1		Diphda	349 35.8	S 18 12.2			
05	250 31.2	226 08.3	28.8	151 32.6	50.6		307 45.2	16.2		310 44.2	36.1							
06	265 33.6	241 10.6	N17 29.1	166 34.1	N25 50.5		322 47.2	S20 16.1		325 46.5	S20 36.0		Dubhe	194 39.5	N 61 57.6			
07	280 36.1	256 13.0	29.5	181 35.5	50.4		337 49.2	16.0		340 48.7	36.0		Elnath	279 02.6	N 28 34.5			
08	295 38.6	271 15.3	29.9	196 37.0	50.3		352 51.2	15.9		355 51.0	36.0		Eltanin	91 04.5	N 51 29.4			
09	310 41.0	286 17.7	30.2	211 38.5	50.2		7 53.2	15.8		10 53.3	35.9		Enif	34 26.2	N 9 41.7			
10	325 43.5	301 20.0	30.6	226 40.0	50.1		22 55.2	15.7		25 55.5	35.9		Fomalhaut	16 07.9	S 29 49.8			
11	340 45.9	316 22.3	31.0	241 41.5	50.0		37 57.2	15.6		40 57.8	35.8							
12	355 48.4	331 24.7	N17 31.3	256 43.0	N25 49.9		52 59.2	S20 15.5		56 00.0	S20 35.8		Gacrux	172 44.3	S 56 53.7			
13	10 50.9	346 27.0	31.7	271 44.5	49.8		68 01.2	15.5		71 02.3	35.8		Gienah	176 32.6	S 17 19.7			
14	25 53.3	1 29.4	32.0	286 45.9	49.7		83 03.2	15.4		86 04.6	35.7		Hadar	149 43.4	S 60 11.0			
15	40 55.8	16 31.8	32.4	301 47.4	49.6		98 05.2	15.3		101 06.8	35.7		Hamal	328 45.6	N 23 16.6			
16	55 58.3	31 34.1	32.7	316 48.9	49.5		113 07.2	15.2		116 09.1	35.7		Kaus Aust.	84 36.2	S 34 24.1			
17	71 00.7	46 36.5	33.1	331 50.4	49.4		128 09.3	15.1		131 11.3	35.6							
18	86 03.2	61 38.9	N17 33.4	346 51.9	N25 49.3		143 11.3	S20 15.0		146 13.6	S20 35.6		Kochab	137 17.6	N 74 18.7			
19	101 05.7	76 41.2	33.8	1 53.3	49.1		158 13.3	14.9		161 15.9	35.6		Markab	14 18.0	N 14 59.6			
20	116 08.1	91 43.6	34.1	16 54.8	49.0		173 15.3	14.8		176 18.1	35.5		Menkar	314 56.6	N 3 56.1			
21	131 10.6	106 46.0	34.5	31 56.3	48.9		188 17.3	14.8		191 20.4	35.5		Menkent	148 53.8	S 36 10.7			
22	146 13.0	121 48.4	34.8	46 57.8	48.8		203 19.3	14.7		206 22.7	35.5		Miaplacidus	221 47.3	S 69 33.7			
23	161 15.5	136 50.8	35.2	61 59.2	48.7		218 21.3	14.6		221 24.9	35.4							
19 00	176 18.0	151 53.2	N17 35.5	77 00.7	N25 48.6		233 23.3	S20 14.5		236 27.2	S20 35.4		Mirfak	309 37.2	N 49 43.5			
01	191 20.4	166 55.6	35.8	92 02.2	48.5		248 25.3	14.4		251 29.4	35.3		Nunki	76 47.3	S 26 20.7			
02	206 22.9	181 58.0	36.2	107 03.7	48.4		263 27.3	14.3		266 31.7	35.3		Peacock	54 21.8	S 56 51.5			
03	221 25.4	197 00.4	36.5	122 05.1	48.3		278 29.4	14.2		281 34.0	35.3		Pollux	244 15.8	N 28 07.2			
04	236 27.8	212 02.8	36.8	137 06.6	48.2		293 31.4	14.1		296 36.2	35.2		Procyon	245 40.9	N 5 19.3			
05	251 30.3	227 05.2	37.2	152 08.1	48.1		308 33.4	14.0		311 38.5	35.2							
06	266 32.8	242 07.6	N17 37.5	167 09.6	N25 48.0		323 35.4	S20 14.0		326 40.8	S20 35.2		Rasalhague	96 43.1	N 12 35.1			
07	281 35.2	257 10.1	37.8	182 11.0	47.9		338 37.4	13.9		341 43.0	35.1		Regulus	208 25.2	N 12 09.3			
08	296 37.7	272 12.5	38.1	197 12.5	47.8		353 39.4	13.8		356 45.3	35.1		Rigel	281 50.1	S 8 15.0			
09	311 40.2	287 14.9	38.4	212 14.0	47.6		8 41.4	13.7		11 47.5	35.1		Rigel Kent.	140 45.2	S 60 40.3			
10	326 42.6	302 17.3	38.8	227 15.4	47.5		23 43.4	13.6		26 49.8	35.0		Sabik	102 57.8	S 15 40.6			
11	341 45.1	317 19.8	39.1	242 16.9	47.4		38 45.4	13.5		41 52.1	35.0							
12	356 47.5	332 22.2	N17 39.4	257 18.4	N25 47.3		53 47.5	S20 13.4		56 54.3	S20 35.0		Schedar	350 26.1	N 56 19.4			
13	11 50.0	347 24.7	39.7	272 19.9	47.2		68 49.5	13.3		71 56.6	34.9		Shaula	97 15.5	S 37 04.4			
14	26 52.5	2 27.1	40.0	287 21.3	47.1		83 51.5	13.2		86 58.9	34.9		Sirius	259 08.5	S 16 40.0			
15	41 54.9	17 29.6	40.3	302 22.8	47.0		98 53.5	13.2		102 01.1	34.9		Spica	159 12.6	S 10 57.6			
16	56 57.4	32 32.0	40.6	317 24.3	46.9		113 55.5	13.1		117 03.4	34.8		Suhail	223 21.2	S 43 16.8			
17	71 59.9	47 34.5	40.9	332 25.7	46.8		128 57.5	13.0		132 05.7	34.8							
18	87 02.3	62 36.9	N17 41.2	347 27.2	N25 46.7		143 59.5	S20 12.9		147 07.9	S20 34.8		Vega	81 05.8	N 38 44.6			
19	102 04.8	77 39.4	41.5	2 28.7	46.6		159 01.5	12.8		162 10.2	34.7		Zuben'ubi	137 49.0	S 15 52.8			
20	117 07.3	92 41.9	41.8	17 30.1	46.4		174 03.6	12.7		177 12.4	34.7							
21	132 09.7	107 44.4	42.1	32 31.6	46.3		189 05.6	12.6		192 14.7	34.7							
22	147 12.2	122 46.8	42.4	47 33.0	46.2		204 07.6											

G.M.T.	SUN		MOON				Lat.	Twilight		Sun-rise	Moonrise									
	G.H.A.	Dec.	G.H.A.	<i>v</i>	Dec.	<i>d</i>		H.P.	Naut.		Civil	17	18	19	20					
							<i>h</i>			<i>m</i>						<i>h</i>	<i>m</i>	<i>h</i>	<i>m</i>	<i>h</i>
d h	°	'	°	'	°	'	'	°	<i>h</i>	<i>m</i>	<i>h</i>	<i>m</i>	<i>h</i>	<i>m</i>	<i>h</i>	<i>m</i>				
17 00	177	50.9	S 1	31.5	174	21.8	9.0	S 2	15.0	11.6	59.9	N 72	03 36	05 02	06 10	06 50	06 44	06 37	06 30	
01	192	51.1		30.5	188	49.8	9.0		2 03.4	11.6	59.8	N 70	03 53	05 09	06 10	06 49	06 49	06 49	06 49	
02	207	51.3		29.5	203	17.8	9.1		1 51.8	11.6	59.8	68	04 06	05 14	06 09	06 48	06 53	06 58	07 04	
03	222	51.5		28.5	217	45.9	9.1		1 40.2	11.7	59.8	66	04 16	05 18	06 09	06 47	06 56	07 05	07 17	
04	237	51.6		27.5	232	14.0	9.2		1 28.5	11.6	59.8	64	04 25	05 22	06 09	06 46	06 59	07 12	07 27	
05	252	51.8		26.5	246	42.2	9.1		1 16.9	11.6	59.7	62	04 32	05 25	06 09	06 45	07 01	07 17	07 36	
06	267	52.0	S 1	25.6	261	10.3	9.3	S 1	05.3	11.6	59.7	60	04 38	05 27	06 09	06 45	07 03	07 22	07 44	
07	282	52.2		24.6	275	38.6	9.2		0 53.7	11.6	59.7	N 58	04 43	05 29	06 08	06 44	07 05	07 27	07 50	
08	297	52.4		23.6	290	06.8	9.3		0 42.1	11.6	59.7	56	04 48	05 31	06 08	06 43	07 07	07 31	07 57	
09	312	52.5		22.6	304	35.1	9.3		0 30.5	11.6	59.6	54	04 51	05 33	06 08	06 43	07 08	07 34	08 02	
10	327	52.7		21.6	319	03.4	9.3		0 18.9	11.5	59.6	52	04 55	05 34	06 08	06 43	07 10	07 37	08 07	
11	342	52.9		20.6	333	31.7	9.4	S 0	07.4	11.6	59.6	50	04 58	05 36	06 08	06 42	07 11	07 40	08 11	
12												45	05 04	05 38	06 08	06 41	07 14	07 47	08 21	
13	357	53.1	S 1	19.6	348	00.1	9.4	N 0	04.2	11.6	59.6	N 40	05 09	05 40	06 07	06 41	07 16	07 52	08 29	
14	12	53.3		18.6	2	28.5	9.5		0 15.8	11.5	59.5	35	05 12	05 42	06 07	06 40	07 18	07 57	08 36	
15	27	53.4		17.6	16	57.0	9.4		0 27.3	11.5	59.5	30	05 15	05 43	06 07	06 40	07 20	08 01	08 42	
16	42	53.6		16.7	31	25.4	9.5		0 38.8	11.6	59.5	20	05 19	05 44	06 06	06 39	07 24	08 08	08 52	
17	57	53.8		15.7	45	53.9	9.6		0 50.4	11.5	59.5	N 10	05 20	05 45	06 06	06 38	07 27	08 14	09 02	
18	72	54.0		14.7	60	22.5	9.5		1 01.9	11.4	59.4	0	05 20	05 44	06 05	06 37	07 29	08 20	09 11	
19	87	54.2	S 1	13.7	74	51.0	9.6	N 1	13.3	11.5	59.4	S 10	05 19	05 43	06 04	06 37	07 32	08 26	09 20	
20	102	54.3		12.7	89	19.6	9.6		1 24.8	11.4	59.4	20	05 16	05 41	06 03	06 36	07 35	08 33	09 29	
21	117	54.5		11.7	103	48.2	9.7		1 36.2	11.5	59.3	30	05 10	05 38	06 02	06 35	07 39	08 40	09 40	
22	132	54.7		10.7	118	16.9	9.6		1 47.7	11.4	59.3	35	05 06	05 36	06 01	06 34	07 40	08 44	09 46	
23	147	54.9		09.7	132	45.5	9.7		1 59.1	11.4	59.3	40	05 02	05 33	06 00	06 34	07 43	08 49	09 53	
	162	55.1		08.7	147	14.2	9.8		2 10.5	11.3	59.2	45	04 55	05 30	05 59	06 33	07 45	08 55	10 02	
18 00	177	55.2	S 1	07.8	161	43.0	9.7	N 2	21.8	11.3	59.2	S 50	04 47	05 26	05 58	06 33	07 48	09 02	10 12	
01	192	55.4		06.8	176	11.7	9.8		2 33.1	11.3	59.2	52	04 44	05 24	05 58	06 32	07 50	09 05	10 17	
02	207	55.6		05.8	190	40.5	9.8		2 44.4	11.3	59.2	54	04 39	05 21	05 57	06 32	07 52	09 08	10 22	
03	222	55.8		04.8	205	09.3	9.8		2 55.7	11.3	59.1	56	04 34	05 19	05 56	06 32	07 53	09 12	10 28	
04	237	56.0		03.8	219	38.1	9.9		3 07.0	11.2	59.1	58	04 29	05 16	05 55	06 31	07 55	09 17	10 34	
05	252	56.2		02.8	234	07.0	9.9		3 18.2	11.2	59.1	S 60	04 22	05 13	05 54	06 31	07 58	09 21	10 42	
06	267	56.3	S 1	01.8	248	35.9	9.9	N 3	29.4	11.1	59.0									
07	282	56.5		1 00.8	263	04.8	9.9		3 40.5	11.1	59.0	Lat.	Sun-set	Twilight		Moonset				
08	297	56.7		0 59.9	277	33.7	10.0		3 51.6	11.1	59.0			Civil	Naut.	17	18	19	20	
09	312	56.9		0 58.9	292	02.7	10.0		4 02.7	11.1	58.9	°	<i>h</i>	<i>m</i>	<i>h</i>	<i>m</i>	<i>h</i>	<i>m</i>	<i>h</i>	<i>m</i>
10	327	57.1		57.9	306	31.7	10.0		4 13.8	11.0	58.9	N 72	18 09	19 17	20 45	19 19	21 14	23 07	24 59	
11	342	57.2		56.9	321	00.7	10.0		4 24.8	10.9	58.9	N 70	18 09	19 10	20 27	19 17	21 05	22 49	24 31	
12	357	57.4	S 0	55.9	335	29.7	10.0	N 4	35.7	11.0	58.8	N 70	18 09	19 10	20 27	19 17	21 05	22 49	24 31	
13	12	57.6		54.9	349	58.7	10.1		4 46.7	10.9	58.8	68	18 09	19 05	20 14	19 16	20 57	22 35	24 09	
14	27	57.8		53.9	4	27.8	10.1		4 57.6	10.8	58.8	66	18 09	19 00	20 03	19 15	20 51	22 24	23 53	
15	42	58.0		52.9	18	56.9	10.1		5 08.4	10.8	58.7	64	18 09	18 56	19 54	19 14	20 46	22 15	23 39	
16	57	58.2		51.9	33	26.0	10.2		5 19.2	10.8	58.7	62	18 09	18 53	19 47	19 13	20 41	22 07	23 28	
17	72	58.3		51.0	47	55.2	10.1		5 30.0	10.7	58.7	60	18 09	18 51	19 40	19 12	20 37	22 00	23 18	
18	87	58.5	S 0	50.0	62	24.3	10.2	N 5	40.7	10.7	58.6	N 58	18 09	18 48	19 35	19 11	20 34	21 54	23 09	
19	102	58.7		49.0	76	53.5	10.2		5 51.4	10.7	58.6	56	18 09	18 46	19 30	19 10	20 31	21 49	23 02	
20	117	58.9		48.0	91	22.7	10.2		6 02.1	10.6	58.6	54	18 09	18 45	19 26	19 10	20 28	21 44	22 56	
21	132	59.1		47.0	105	51.9	10.2		6 12.7	10.5	58.5	52	18 09	18 43	19 23	19 09	20 26	21 39	22 50	
22	147	59.3		46.0	120	21.1	10.3		6 23.2	10.5	58.5	50	18 10	18 42	19 20	19 09	20 24	21 36	22 44	
23	162	59.4		45.0	134	50.4	10.3		6 33.7	10.4	58.5	45	18 10	18 39	19 13	19 08	20 19	21 27	22 33	
19 00	177	59.6	S 0	44.0	149	19.7	10.2	N 6	44.1	10.4	58.4	N 40	18 10	18 37	19 08	19 07	20 15	21 20	22 22	
01	192	59.8		43.0	163	48.9	10.4		6 54.5	10.4	58.4	35	18 10	18 35	19 05	19 06	20 11	21 14	22 15	
02	208	00.0		42.1	178	18.3	10.3		7 04.9	10.3	58.4	30	18 10	18 34	19 02	19 06	20 08	21 09	22 08	
03	223	00.2		41.1	192	47.6	10.3		7 15.2	10.2	58.3	20	18 11	18 32	18 58	19 04	20 03	21 00	21 55	
04	238	00.3		40.1	207	16.9	10.4		7 25.4	10.2	58.3	N 10	18 11	18 32	18 56	19 03	19 58	20 52	21 45	
05	253	00.5		39.1	221	46.3	10.4		7 35.6	10.1	58.3	0	18 11	18 32	18 56	19 02	19 54	20 44	21 35	
06	268	00.7	S 0	38.1	236	15.7	10.3	N 7	45.7	10.1	58.2	S 10	18 12	18 33	18 57	19 01	19 49	20 37	21 24	
07	283	00.9		37.1	250	45.0	10.5		7 55.8	10.0	58.2	20	18 13	18 35	19 00	19 00	19 45	20 29	21 14	
08	298	01.1		36.1	265	14.5	10.4		8 05.8	10.0	58.1	30	18 14	18 38	19					

G.M.T.		ARIES		VENUS -4.2		MARS +0.7		JUPITER -1.6		SATURN +0.9		STARS		
		G.H.A.		G.H.A.	Dec.	G.H.A.	Dec.	G.H.A.	Dec.	G.H.A.	Dec.	Name	S.H.A.	Dec.
2000	d	h												
	00	177 17.1	152 51.8	N17 43.0	77 36.0	N25 46.0	234 11.6	S20 12.4	237 21.5	S20 34.6	Acamar	315 48.6	S 40 27.9	
	01	192 19.6	167 54.3	43.3	92 37.4	45.9	249 13.6	12.3	252 23.8	34.5	Achernar	335 56.7	S 57 26.3	
	02	207 22.0	182 56.8	43.6	107 38.9	45.8	264 15.6	12.2	267 26.0	34.5	Acruz	173 52.7	S 62 53.0	
	03	222 24.5	197 59.3	43.9	122 40.4	45.7	279 17.7	12.1	282 28.3	34.4	Adhara	255 43.5	S 28 55.5	
MONDAY	04	237 27.0	213 01.8	44.1	137 41.8	45.6	294 19.7	12.0	297 30.6	34.4	Aldebaran	291 34.8	N 16 25.8	
	05	252 29.4	228 04.3	44.4	152 43.3	45.5	309 21.7	11.9	312 32.8	34.4				
	06	267 31.9	243 06.8	N17 44.7	167 44.7	N25 45.3	324 23.7	S20 11.8	327 35.1	S20 34.3	Alioth	166 54.8	N 56 10.1	
	07	282 34.4	258 09.3	45.0	182 46.2	45.2	339 25.7	11.8	342 37.4	34.3	Alkaid	153 29.6	N 49 30.3	
	08	297 36.8	273 11.8	45.2	197 47.6	45.1	354 27.7	11.7	357 39.6	34.3	Al Na'ir	28 33.7	S 47 08.9	
	09	312 39.3	288 14.3	45.5	212 49.1	45.0	9 29.8	11.6	12 41.9	34.2	Alnilam	276 26.5	S 1 13.8	
	10	327 41.8	303 16.9	45.8	227 50.6	44.9	24 31.8	11.5	27 44.2	34.2	Alphard	218 34.6	S 8 29.6	
	11	342 44.2	318 19.4	46.0	242 52.0	44.8	39 33.8	11.4	42 46.4	34.2				
	12	357 46.7	333 21.9	N17 46.3	257 53.5	N25 44.7	54 35.8	S20 11.3	57 48.7	S20 34.1	Alphecca	126 44.3	N 26 50.5	
	13	12 49.1	348 24.5	46.6	272 54.9	44.6	69 37.8	11.2	72 51.0	34.1	Alpheratz	358 24.7	N 28 52.4	
	14	27 51.6	3 27.0	46.8	287 56.4	44.5	84 39.8	11.1	87 53.2	34.1	Altair	62 46.9	N 8 45.8	
	15	42 54.1	18 29.6	47.1	302 57.8	44.3	99 41.9	11.1	102 55.5	34.0	Ankaa	353 55.1	S 42 31.1	
	16	57 56.5	33 32.1	47.3	317 59.3	44.2	114 43.9	11.0	117 57.8	34.0	Antares	113 14.6	S 26 20.7	
	17	72 59.0	48 34.7	47.6	333 00.7	44.1	129 45.9	10.9	133 00.0	34.0				
	18	88 01.5	63 37.2	N17 47.9	348 02.2	N25 44.0	144 47.9	S20 10.8	148 02.3	S20 33.9	Arcturus	146 31.5	N 19 22.9	
	19	103 03.9	78 39.8	48.1	3 03.6	43.9	159 49.9	10.7	163 04.6	33.9	Atria	108 51.7	S 68 57.2	
	20	118 06.4	93 42.3	48.4	18 05.1	43.8	174 51.9	10.6	178 06.8	33.9	Avior	234 33.8	S 59 23.4	
	21	133 08.9	108 44.9	48.6	33 06.5	43.7	189 54.0	10.5	193 09.1	33.8	Bellatrix	279 14.4	N 6 18.7	
	22	148 11.3	123 47.5	48.8	48 08.0	43.5	204 56.0	10.4	208 11.4	33.8	Betelgeuse	271 44.1	N 7 23.8	
	23	163 13.8	138 50.0	49.1	63 09.4	43.4	219 58.0	10.4	223 13.6	33.8				
2100	00	178 16.2	153 52.6	N17 49.3	78 10.9	N25 43.3	235 00.0	S20 10.3	238 15.9	S20 33.7	Canopus	264 13.6	S 52 40.9	
	01	193 18.7	168 55.2	49.6	93 12.3	43.2	250 02.0	10.2	253 18.2	33.7	Capella	281 32.9	N 45 57.6	
	02	208 21.2	183 57.8	49.8	108 13.8	43.1	265 04.1	10.1	268 20.4	33.7	Deneb	49 58.6	N 45 08.3	
	03	223 23.6	199 00.4	50.0	123 15.2	43.0	280 06.1	10.0	283 22.7	33.6	Denebola	183 13.6	N 14 47.2	
	04	238 26.1	214 03.0	50.3	138 16.7	42.9	295 08.1	09.9	298 25.0	33.6	Diphda	349 35.8	S 18 12.2	
	05	253 28.6	229 05.6	50.5	153 18.1	42.8	310 10.1	09.8	313 27.2	33.6				
	06	268 31.0	244 08.2	N17 50.7	168 19.6	N25 42.6	325 12.1	S20 09.7	328 29.5	S20 33.5	Dubhe	194 39.5	N 61 57.7	
	07	283 33.5	259 10.8	51.0	183 21.0	42.5	340 14.2	09.7	343 31.8	33.5	Elmath	279 02.6	N 28 34.5	
	08	298 36.0	274 13.4	51.2	198 22.4	42.4	355 16.2	09.6	358 34.1	33.5	Eltanin	91 04.5	N 51 29.4	
	09	313 38.4	289 16.0	51.4	213 23.9	42.3	10 18.2	09.5	13 36.3	33.4	Enif	34 26.1	N 9 41.7	
TUESDAY	10	328 40.9	304 18.6	51.6	228 25.3	42.2	25 20.2	09.4	28 38.6	33.4	Fomalhaut	16 07.9	S 29 49.8	
	11	343 43.4	319 21.2	51.8	243 26.8	42.1	40 22.2	09.3	43 40.9	33.4				
	12	358 45.8	334 23.9	N17 52.0	258 28.2	N25 42.0	55 24.3	S20 09.2	58 43.1	S20 33.3	Gacrux	172 44.3	S 56 53.7	
	13	13 48.3	349 26.5	52.3	273 29.7	41.8	70 26.3	09.1	73 45.4	33.3	Gienah	176 32.6	S 17 19.7	
	14	28 50.7	4 29.1	52.5	288 31.1	41.7	85 28.3	09.0	88 47.7	33.2	Hadar	149 43.4	S 60 11.0	
	15	43 53.2	19 31.8	52.7	303 32.5	41.6	100 30.3	09.0	103 50.0	33.2	Hamal	328 45.6	N 23 16.6	
	16	58 55.7	34 34.4	52.9	318 34.0	41.5	115 32.4	08.9	118 52.2	33.2	Kaus Aust.	84 36.2	S 34 24.1	
	17	73 58.1	49 37.1	53.1	333 35.4	41.4	130 34.4	08.8	133 54.5	33.1				
	18	89 00.6	64 39.7	N17 53.3	348 36.8	N25 41.3	145 36.4	S20 08.7	148 56.8	S20 33.1	Kochab	137 17.6	N 74 18.7	
	19	104 03.1	79 42.4	53.5	3 38.3	41.1	160 38.4	08.6	163 59.0	33.1	Markab	14 18.0	N 14 59.6	
	20	119 05.5	94 45.0	53.7	18 39.7	41.0	175 40.4	08.5	179 01.3	33.0	Menkar	314 56.6	N 3 56.1	
	21	134 08.0	109 47.7	53.9	33 41.2	40.9	190 42.5	08.4	194 03.6	33.0	Menkent	148 53.8	S 36 10.7	
	22	149 10.5	124 50.3	54.1	48 42.6	40.8	205 44.5	08.3	209 05.9	33.0	Miaplacidus	221 47.3	S 69 33.7	
	23	164 12.9	139 53.0	54.3	63 44.0	40.7	220 46.5	08.3	224 08.1	32.9				
	2200	00	179 15.4	154 55.7	N17 54.5	78 45.5	N25 40.6	235 48.5	S20 08.2	239 10.4	S20 32.9	Mirfak	309 37.2	N 49 43.4
01		194 17.9	169 58.3	54.6	93 46.9	40.5	250 50.6	08.1	254 12.7	32.9	Nunki	76 47.3	S 26 20.7	
02		209 20.3	185 01.0	54.8	108 48.3	40.3	265 52.6	08.0	269 14.9	32.8	Peacock	54 21.8	S 56 51.5	
03		224 22.8	200 03.7	55.0	123 49.8	40.2	280 54.6	07.9	284 17.2	32.8	Pollux	244 15.8	N 28 07.2	
04		239 25.2	215 06.4	55.2	138 51.2	40.1	295 56.6	07.8	299 19.5	32.8	Procyon	245 40.9	N 5 19.3	
	05	254 27.7	230 09.1	55.4	153 52.6	40.0	310 58.7	07.7	314 21.8	32.7				
	06	269 30.2	245 11.8	N17 55.5	168 54.1	N25 39.9	326 00.7	S20 07.6	329 24.0	S20 32.7	Rasalhague	96 43.1	N 12 35.1	
	07	284 32.6	260 14.5	55.7	183 55.5	39.8	341 02.7	07.6	344 26.3	32.7	Regulus	208 25.2	N 12 09.3	
	08	299 35.1	275 17.2	55.9	198 56.9	39.6	356 04.7	07.5	359 28.6	32.6	Rigel	281 50.1	S 8 15.0	
	09	314 37.6	290 19.9	56.1	213 58.4	39.5	11 06.8	07.4	14 30.8	32.6	Rigel Kent.	140 45.2	S 60 40.3	
WEDNESDAY	10	329 40.0	305 22.6	56.2	228 59.8	39.4	26 08.8	07.3	29 33.1	32.6	Sabik	102 57.8	S 15 40.6	
	11	344 42.5	320 25.3	56.4	244 01.2	39.3	41 10.8	07.2	44 35.4	32.5				
	12	359 45.0	335 28.0	N17 56.6	259 02.6	N25 39.2	56 12.8	S20 07.1	59 37.7	S20 32.5	Schedar	350 26.1	N 56 19.4	
	13	14 47.4	350 30.8	56.7	274 04.1	39.0	71 14.9	07.0	74 39.9	32.5	Shaula	97 15.5	S 37 04.4	
	14	29 49.9	5 33.5	56.9	289 05.5	38.9	86 16.9	07.0	89 42.2	32.4	Sirius	259 08.5	S 16 40.0	
	15	44 52.4	20 36.2	57.0	304 06.9	38.8	101 18.9	06.9	104 44.5	32.4	Spica	159 12.6	S 10 57.6	
	16	59 54.8	35 39.0	57.2	319 08.4	38.7	116 21.0	06.8	119 46.8	32.4	Suhail	223 21.2	S 43 16.8	
	17	74 57.3	50 41.7	57.3	334 09.8	38.6	131 23.0	06.7	134 49.0	32.3				
	18	89 59.7	65 44.4	N17 57.5	349 11.2	N25 38.5	146 25.0	S20 06.6	149 51.3	S20 32.3	Vega	81 05.8	N 38 44.6	
	19	105 02.2	80 47.2	57.6	4 12.6	38.3	161 27.0	06.5	164 53.6	32.3	Zuben'ubi	137 48.9	S 15 52.8	
	20	120 04.7	95 49.9	57.8	19 14.1	38.2	176 29.1	06.4	179 55.9	32.2				
	21	135 07.1	110 52.7	57.9	34 15.5	38.1	191 31.1	06.3	194 58.1	32.2		S.H.A.	Mer. Pass.	
	22	150 09.6	125 55.5	58.1	49 16.9	38.0	206 33.1	06.3	210 00.4	32.2	Venus	335 36.4	13 42	
	23	165 12.1	140 58.2	58.2	64 18.3	37.9	221 35.2	06.2	225 02.7	32.1	Mars	259 54.7	18 45	
											Jupiter	56 43.8	8 19	
Mer. Pass.		12 04.9	v 2.6	d 0.2	v 1.4	d 0.1	v 2.0	d 0.1	v 2.3	d 0.0	Saturn	59 59.7	8 06	

G.M.T.	SUN			MOON					Lat.	Twilight		Sun-rise	Moonrise							
	G.H.A.	Dec.	°	G.H.A.	v	Dec.	d	H.P.		Naut.	Civil		20	21	22	23				
												h m	h m	h m	h m	h m	h m	h m	h m	
MONDAY	d h	°	'	°	'	°	'	°	'	N 72	03 16	04 46	05 54	06 30	06 22	06 09	□			
	00	178	04.0	S 0	20.3	137	07.0	10.6	N 10	37.8	8.9	57.6	N 70	03 36	04 54	05 56	06 49	06 52	06 58	07 12
	01	193	04.2	19.3	151	36.6	10.7	10	46.7	8.9	57.5	68	03 51	05 01	05 57	07 04	07 14	07 29	07 53	
	02	208	04.4	18.3	166	06.3	10.6	10	55.6	8.8	57.5	66	04 03	05 06	05 58	07 17	07 32	07 52	08 21	
	03	223	04.6	17.3	180	35.9	10.7	11	04.4	8.7	57.5	64	04 13	05 11	05 58	07 27	07 46	08 10	08 43	
	04	238	04.8	16.4	195	05.6	10.7	11	13.1	8.7	57.4	62	04 21	05 15	05 59	07 36	07 58	08 25	09 00	
	05	253	05.0	15.4	209	35.3	10.7	11	21.8	8.6	57.4	60	04 28	05 18	06 00	07 44	08 08	08 38	09 14	
	06	268	05.1	S 0	14.4	224	05.0	10.7	N 11	30.4	8.5	57.3	N 58	04 34	05 21	06 00	07 50	08 17	08 49	09 27
	07	283	05.3	13.4	238	34.7	10.7	11	38.9	8.4	57.3	56	04 39	05 23	06 00	07 57	08 25	08 59	09 37	
	08	298	05.5	12.4	253	04.4	10.8	11	47.3	8.4	57.3	54	04 44	05 25	06 01	08 02	08 32	09 07	09 47	
	09	313	05.7	11.4	267	34.2	10.7	11	55.7	8.3	57.2	52	04 48	05 27	06 01	08 07	08 39	09 14	09 55	
	10	328	05.9	10.4	282	03.9	10.7	12	04.0	8.2	57.2	50	04 51	05 29	06 01	08 11	08 44	09 21	10 03	
	11	343	06.1	09.4	296	33.6	10.8	12	12.2	8.2	57.2	45	04 58	05 33	06 02	08 21	08 57	09 36	10 19	
	12	358	06.2	S 0	08.5	311	03.4	10.8	N 12	20.4	8.0	57.1	N 40	05 04	05 35	06 02	08 29	09 07	09 48	10 32
	13	13	06.4	07.5	325	33.2	10.8	12	28.4	8.0	57.1	35	05 08	05 38	06 03	08 36	09 16	09 59	10 43	
	14	28	06.6	06.5	340	03.0	10.8	12	36.4	8.0	57.1	30	05 11	05 39	06 03	08 42	09 24	10 07	10 53	
	15	43	06.8	05.5	354	32.8	10.8	12	44.4	7.8	57.0	20	05 16	05 42	06 04	08 52	09 37	10 23	11 10	
	16	58	07.0	04.5	9	02.6	10.8	12	52.2	7.8	57.0	N 10	05 19	05 43	06 04	09 02	09 49	10 37	11 25	
	17	73	07.2	03.5	23	32.4	10.8	13	00.0	7.7	57.0	0	05 19	05 43	06 04	09 11	10 00	10 50	11 39	
	18	88	07.4	S 0	02.5	38	02.2	10.8	N 13	07.7	7.6	56.9	S 10	05 19	05 43	06 04	09 20	10 12	11 03	11 53
	19	103	07.5	01.5	52	32.0	10.9	13	15.3	7.5	56.9	20	05 16	05 42	06 04	09 29	10 24	11 17	12 08	
	20	118	07.7	S 0	00.6	67	01.9	10.8	13	22.8	7.4	56.8	30	05 12	05 40	06 04	09 40	10 38	11 33	12 25
	21	133	07.9	N 0	00.4	81	31.7	10.9	13	30.2	7.4	56.8	35	05 09	05 38	06 04	09 46	10 46	11 42	12 35
22	148	08.1	01.4	96	01.6	10.8	13	37.6	7.3	56.8	40	05 05	05 36	06 04	09 53	10 55	11 53	12 46		
23	163	08.3	02.4	110	31.4	10.9	13	44.9	7.2	56.7	45	05 00	05 34	06 03	10 02	11 05	12 05	13 00		
TUESDAY	00	178	08.5	N 0	03.4	125	01.3	10.9	N 13	52.1	7.1	56.7	S 50	04 53	05 31	06 03	10 12	11 18	12 20	13 16
	01	193	08.6	04.4	139	31.2	10.9	13	59.2	7.1	56.7	52	04 49	05 29	06 03	10 17	11 24	12 27	13 24	
	02	208	08.8	05.4	154	01.1	10.9	14	06.3	6.9	56.6	54	04 45	05 27	06 03	10 22	11 31	12 35	13 33	
	03	223	09.0	06.4	168	31.0	10.9	14	13.2	6.9	56.6	56	04 41	05 25	06 02	10 28	11 39	12 44	13 42	
	04	238	09.2	07.3	183	00.9	10.9	14	20.1	6.8	56.6	58	04 36	05 23	06 02	10 34	11 47	12 54	13 53	
	05	253	09.4	08.3	197	30.8	10.9	14	26.9	6.7	56.5	S 60	04 30	05 20	06 02	10 42	11 57	13 06	14 06	
	06	268	09.6	N 0	09.3	212	00.7	11.0	N 14	33.6	6.7	56.5	Lat.	Sun-set	Twilight		Moonset			
	07	283	09.8	10.3	226	30.7	10.9	14	40.3	6.5	56.5			Civil	Naut.	20	21	22	23	
	08	298	10.0	11.3	241	00.6	11.0	14	46.8	6.5	56.4					h m	h m	h m	h m	
	09	313	10.1	12.3	255	30.6	10.9	14	53.3	6.4	56.4					h m	h m	h m	h m	
	10	328	10.3	13.3	270	00.5	11.0	14	59.7	6.3	56.4					h m	h m	h m	h m	
	11	343	10.5	14.3	284	30.5	11.0	15	06.0	6.2	56.3	N 72	18 23	19 32	21 03	24 59	00 59	02 56	□	
	12	358	10.7	N 0	15.2	299	00.5	11.0	N 15	12.2	6.1	56.3	N 70	18 21	19 23	20 43	24 51	00 31	02 08	03 36
	13	13	10.9	16.2	313	30.5	11.0	15	18.3	6.0	56.3	68	18 20	19 16	20 27	24 09	00 09	01 37	02 55	
	14	28	11.1	17.2	328	00.5	11.0	15	24.3	6.0	56.2	66	18 19	19 10	20 14	23 53	25 15	01 15	02 27	
	15	43	11.3	18.2	342	30.5	11.0	15	30.3	5.9	56.2	64	18 18	19 06	20 04	23 39	24 57	00 57	02 06	
	16	58	11.5	19.2	357	00.5	11.0	15	36.2	5.7	56.2	62	18 17	19 02	19 56	23 28	24 42	00 42	01 49	
	17	73	11.6	20.2	11	30.5	11.0	15	41.9	5.7	56.1	60	18 16	18 58	19 49	23 18	24 30	00 30	01 35	
	18	88	11.8	N 0	21.2	26	00.5	11.1	N 15	47.6	5.7	56.1	N 58	18 16	18 55	19 42	23 09	24 20	00 20	01 23
	19	103	12.0	22.2	40	30.6	11.0	15	53.3	5.5	56.1	56	18 15	18 53	19 37	23 02	24 10	00 10	01 12	
	20	118	12.2	23.1	55	00.6	11.1	15	58.8	5.4	56.0	54	18 15	18 50	19 32	22 56	24 02	00 02	01 03	
	21	133	12.4	24.1	69	30.7	11.1	16	04.2	5.4	56.0	52	18 15	18 48	19 28	22 50	23 55	24 55	00 55	
	22	148	12.6	25.1	84	00.8	11.0	16	09.6	5.2	56.0	50	18 14	18 46	19 25	22 44	23 48	24 47	00 47	
23	163	12.8	26.1	98	30.8	11.1	16	14.8	5.2	56.0	45	18 13	18 43	19 17	22 33	23 34	24 32	00 32		
WEDNESDAY	00	178	13.0	N 0	27.1	113	00.9	11.1	N 16	20.0	5.1	55.9	N 40	18 13	18 40	19 11	22 23	23 23	24 19	00 19
	01	193	13.1	28.1	127	31.0	11.1	16	25.1	5.0	55.9	35	18 12	18 38	19 07	22 15	23 13	24 08	00 08	
	02	208	13.3	29.1	142	01.1	11.1	16	30.1	4.9	55.9	30	18 12	18 36	19 04	22 08	23 04	23 58	24 49	
	03	223	13.5	30.1	156	31.2	11.2	16	35.0	4.8	55.8	20	18 11	18 33	18 59	21 55	22 50	23 42	24 32	
	04	238	13.7	31.0	171	01.4	11.1	16	39.8	4.7	55.8	N 10	18 11	18 32	18 56	21 45	22 37	23 27	24 17	
	05	253	13.9	32.0	185	31.5	11.1	16	44.5	4.7	55.8	0	18 10	18 31	18 55	21 35	22 24	23 14	24 02	
	06	268	14.1	N 0	33.0	200	01.6	11.2	N 16	49.2	4.5	55.7	S 10	18 10	18 32	18 56	21 24	22 12	23 00	23 48
	07	283	14.3	34.0	214	31.8	11.1	16	53.7	4.5	55.7	20	18 10	18 32	18 58	21 14	21 59	22 46	23 33	
	08	298	14.5	35.0	229	01.9	11.2	16	58.2	4.3	55.7	30	18 10	18 34	19 02	21 01	21 44	22 29	23 16	
	09	313	14.6	36.0	243	32.1	11.2	17	02.5	4.3	55.7	35	18 10	18 36	19 05	20 54	21 36	22 19	23 06	
	10	328	14.8	37.0	258	02.3	11.2	17	06.8	4.2	55.6	40	18 10	18 37	19 09	20 46	21 26	22 09	22 542	

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	ARIES			VENUS -3.9			MARS +0.8			JUPITER -1.7			SATURN +0.9			STARS		
G.M.T.	G.H.A.		Dec.	G.H.A.		Dec.	G.H.A.		Dec.	G.H.A.		Dec.	G.H.A.		Dec.	Name	S.H.A.	Dec.
d h	°	'	°	°	'	°	°	'	°	°	'	°	°	'	°		°	°
26	00	183 11.9	159 30.4 N18 02.0	81 00.8	25 28.8	239 03.8	S19 59.9	242 49.1	S20 29.8	Acamar	315 48.6	S 40 27.9						
	01	198 14.4	174 33.5 01.9	96 02.1	28.6	254 05.8	59.9	257 51.4	29.8	Achernar	335 56.7	S 57 26.2						
	02	213 16.9	189 36.5 01.9	111 03.5	28.5	269 07.9	59.8	272 53.7	29.7	Acrux	173 52.7	S 62 53.1						
	03	228 19.3	204 39.6 01.9	126 04.9	28.4	284 09.9	59.7	287 56.0	29.7	Adhara	255 43.5	S 28 55.5						
	04	243 21.8	219 42.6 01.8	141 06.3	28.3	299 12.0	59.6	302 58.3	29.7	Aldebaran	291 34.9	N 16 25.8						
05	258 24.3	234 45.7 01.8	156 07.7	28.1	314 14.0	59.5	318 00.6	29.7										
06	273 26.7	249 48.8 N18 01.7	171 09.1 N25 28.0	329 16.1 S19 59.4	333 02.8 S20 29.6	Alioth	166 54.8	N 56 10.2										
07	288 29.2	264 51.9 01.7	186 10.4 27.9	344 18.1 59.4	348 05.1 29.6	Alkaid	153 29.6	N 49 30.3										
08	303 31.7	279 54.9 01.6	201 11.8 27.7	359 20.2 59.3	3 07.4 29.6	Al Na'ir	28 33.7	S 47 08.9										
09	318 34.1	294 58.0 01.5	216 13.2 27.6	14 22.2 59.2	18 09.7 29.5	Anilam	276 26.5	S 1 13.8										
10	333 36.6	310 01.1 01.5	231 14.6 27.5	29 24.3 59.1	33 12.0 29.5	Alphard	218 34.6	S 8 29.6										
11	348 39.1	325 04.2 01.4	246 16.0 27.3	44 26.3 59.0	48 14.3 29.5													
12	3 41.5	340 07.3 N18 01.4	261 17.3 N25 27.2	59 28.4 S19 58.9	63 16.6 S20 29.4	Alphecca	126 44.2	N 26 50.6										
13	18 44.0	355 10.4 01.3	276 18.7 27.1	74 30.4 58.9	78 18.8 29.4	Alpheratz	358 24.7	N 28 52.4										
14	33 46.4	10 13.5 01.2	291 20.1 26.9	89 32.4 58.8	93 21.1 29.4	Altair	62 46.8	N 8 45.8										
15	48 48.9	25 16.6 01.1	306 21.5 26.8	104 34.5 58.7	108 23.4 29.3	Ankaa	353 55.1	S 42 31.1										
16	63 51.4	40 19.7 01.1	321 22.9 26.7	119 36.5 58.6	123 25.7 29.3	Antares	113 14.5	S 26 20.7										
17	78 53.8	55 22.8 01.0	336 24.2 26.6	134 38.6 58.5	138 28.0 29.3													
18	93 56.3	70 25.9 N18 00.9	351 25.6 N25 26.4	149 40.6 S19 58.4	153 30.3 S20 29.3	Arcturus	146 31.5	N 19 23.0										
19	108 58.8	85 29.0 00.8	6 27.0 26.3	164 42.7 58.4	168 32.6 29.2	Atria	108 51.6	S 68 57.2										
20	124 01.2	100 32.2 00.8	21 28.4 26.2	179 44.7 58.3	183 34.9 29.2	Avior	234 33.8	S 59 23.4										
21	139 03.7	115 35.3 00.7	36 29.7 26.0	194 46.8 58.2	198 37.2 29.2	Bellatrix	279 14.5	N 6 18.7										
22	154 06.2	130 38.4 00.6	51 31.1 25.9	209 48.8 58.1	213 39.4 29.1	Betelgeuse	271 44.1	N 7 23.8										
23	169 08.6	145 41.5 00.5	66 32.5 25.8	224 50.9 58.0	228 41.7 29.1													
27	00	184 11.1	160 44.7 N18 00.4	81 33.9 N25 25.6	239 52.9 S19 57.9	243 44.0 S20 29.1	Canopus	264 13.7	S 52 40.9									
	01	199 13.5	175 47.8 00.3	96 35.2 25.5	254 55.0 57.9	258 46.3 29.0	Capella	281 32.9	N 45 57.6									
	02	214 16.0	190 51.0 00.2	111 36.6 25.4	269 57.0 57.8	273 48.6 29.0	Deneb	49 58.6	N 45 08.3									
	03	229 18.5	205 54.1 00.1	126 38.0 25.2	284 59.1 57.7	288 50.9 29.0	Denebola	183 13.6	N 14 47.3									
	04	244 20.9	220 57.3 18 00.0	141 39.3 25.1	300 01.1 57.6	303 53.2 28.9	Diphda	349 35.8	S 18 12.1									
05	259 23.4	236 00.4 17 59.9	156 40.7 25.0	315 03.2 57.5	318 55.5 28.9													
06	274 25.9	251 03.6 N17 59.8	171 42.1 N25 24.8	330 05.2 S19 57.4	333 57.8 S20 28.9	Dubhe	194 39.5	N 61 57.7										
07	289 28.3	266 06.7 59.7	186 43.5 24.7	345 07.3 57.4	349 00.0 28.9	El Nath	279 02.6	N 28 34.5										
08	304 30.8	281 09.9 59.5	201 44.8 24.6	0 09.3 57.3	4 02.3 28.8	Eltanin	91 04.4	N 51 29.4										
09	319 33.3	296 13.1 59.4	216 46.2 24.4	15 11.4 57.2	19 04.6 28.8	Enif	34 26.1	N 9 41.7										
10	334 35.7	311 16.3 59.3	231 47.6 24.3	30 13.4 57.1	34 06.9 28.8	Fomalhaut	16 07.8	S 29 49.8										
11	349 38.2	326 19.4 59.2	246 48.9 24.2	45 15.5 57.0	49 09.2 28.7													
12	4 40.7	341 22.6 N17 59.1	261 50.3 N25 24.0	60 17.5 S19 56.9	64 11.5 S20 28.7	Gacrux	172 44.3	S 56 53.8										
13	19 43.1	356 25.8 58.9	276 51.7 23.9	75 19.6 56.9	79 13.8 28.7	Gienah	176 32.6	S 17 19.7										
14	34 45.6	11 29.0 58.8	291 53.0 23.8	90 21.6 56.8	94 16.1 28.6	Hadar	149 43.3	S 60 11.1										
15	49 48.0	26 32.2 58.7	306 54.4 23.6	105 23.7 56.7	109 18.4 28.6	Hamal	328 45.6	N 23 16.6										
16	64 50.5	41 35.4 58.5	321 55.8 23.5	120 25.7 56.6	124 20.7 28.6	Kaus Aust.	84 36.2	S 34 24.1										
17	79 53.0	56 38.6 58.4	336 57.1 23.3	135 27.8 56.5	139 22.9 28.5													
18	94 55.4	71 41.8 N17 58.3	351 58.5 N25 23.2	150 29.8 S19 56.4	154 25.2 S20 28.5	Kochab	137 17.5	N 74 18.8										
19	109 57.9	86 45.0 58.1	6 59.9 23.1	165 31.9 56.4	169 27.5 28.5	Markab	14 18.0	N 14 59.6										
20	125 00.4	101 48.2 58.0	22 01.2 22.9	180 33.9 56.3	184 29.8 28.5	Menkar	314 56.6	N 3 56.1										
21	140 02.8	116 51.4 57.8	37 02.6 22.8	195 36.0 56.2	199 32.1 28.4	Menkent	148 53.8	S 36 10.7										
22	155 05.3	131 54.6 57.7	52 04.0 22.7	210 38.1 56.1	214 34.4 28.4	Miaplacidus	221 47.4	S 69 33.7										
23	170 07.8	146 57.9 57.5	67 05.3 22.5	225 40.1 56.0	229 36.7 28.4													
28	00	185 10.2	162 01.1 N17 57.4	82 06.7 N25 22.4	240 42.2 S19 55.9	244 39.0 S20 28.3	Mirfak	309 37.3	N 49 43.4									
	01	200 12.7	177 04.3 57.2	97 08.1 22.3	255 44.2 55.9	259 41.3 28.3	Nunki	76 47.3	S 26 20.7									
	02	215 15.1	192 07.6 57.0	112 09.4 22.1	270 46.3 55.8	274 43.6 28.3	Peacock	54 21.7	S 56 51.4									
	03	230 17.6	207 10.8 56.9	127 10.8 22.0	285 48.3 55.7	289 45.9 28.2	Pollux	244 15.9	N 28 07.2									
	04	245 20.1	222 14.0 56.7	142 12.1 21.8	300 50.4 55.6	304 48.1 28.2	Procyon	245 41.0	N 5 19.3									
05	260 22.5	237 17.3 56.5	157 13.5 21.7	315 52.4 55.5	319 50.4 28.2													
06	275 25.0	252 20.5 N17 56.4	172 14.9 N25 21.6	330 54.5 S19 55.4	334 52.7 S20 28.2	Rasalhague	96 43.0	N 12 35.1										
07	290 27.5	267 23.8 56.2	187 16.2 21.4	345 56.5 55.4	349 55.0 28.1	Regulus	208 25.2	N 12 09.3										
08	305 29.9	282 27.0 56.0	202 17.6 21.3	0 58.6 55.3	4 57.3 28.1	Rigel	281 50.1	S 8 15.0										
09	320 32.4	297 30.3 55.8	217 18.9 21.2	16 00.7 55.2	19 59.6 28.1	Rigel Kent.	140 45.1	S 60 40.3										
10	335 34.9	312 33.5 55.7	232 20.3 21.0	31 02.7 55.1	35 01.9 28.0	Sabik	102 57.7	S 15 40.6										
11	350 37.3	327 36.8 55.5	247 21.7 20.9	46 04.8 55.0	50 04.2 28.0													
12	5 39.8	342 40.1 N17 55.3	262 23.0 N25 20.7	61 06.8 S19 54.9	65 06.5 S20 28.0	Schedar	350 26.1	N 56 19.4										
13	20 42.3	357 43.4 55.1	277 24.4 20.6	76 08.9 54.9	80 08.8 27.9	Shaula	97 15.5	S 37 04.4										
14	35 44.7	12 46.6 54.9	292 25.7 20.5	91 10.9 54.8	95 11.1 27.9	Sirius	259 08.5	S 16 40.0										
15	50 47.2	27 49.9 54.7	307 27.1 20.3	106 13.0 54.7	110 13.4 27.9	Spica	159 12.6	S 10 57.6										
16	65 49.6	42 53.2 54.5	322 28.4 20.2	121 15.1 54.6	125 15.7 27.9	Suhail	223 21.2	S 43 16.8										
17	80 52.1	57 56.5 54.3	337 29.8 20.0	136 17.1 54.5	140 18.0 27.8													
18	95 54.6	72 59.8 N17 54.1	352 31.1 N25 19.9	151 19.2 S19 54.5	155 20.3 S20 27.8	Vega	81 05.7	N 38 44.6										
19	110 57.0	88 03.1 53.9	7 32.5 19.8	166 21.2 54.4	170 22.6 27.8	Zuben'ubi	137 48.9	S 15 52.9										
20	125 59.5	103 06.4 53.7	22 33.9 19.6	181 23.3 54.3	185 24.9 27.7													
21	141 02.0	118 09.7 53.5	37 35.2 19.5	196 25.4 54.2	200 27.1 27.7	S.H.A.		Mer. Pass.										
22	156 04.4	133 13.0 53.3	52 36.6 19.4	211 27.4 54.1	215 29.4 27.7	Venus	336 33.6	13 14										
23	171 06.9	148 16.3 53.1	67 37.9 19.2	226 29.5 54.0	230 31.7 27.7	Mars	257 22.8	18 32										
						Jupiter	55 41.8	7 59										
						Saturn	59 32.9	7 44										
Mer. Pass.	h m																	
	11 41.3	v 3.2 d 0.1	v 1.4 d 0.1	v 2.1 d 0.1	v 2.3 d 0.0													

Mer. Pass. 11 41.3

v 3.2

d 0.1

v 1.4

d 0.1

v 2.1

d 0.1

v 2.3

d 0.0

G.M.T.	SUN		MOON					Lat.	Twilight		Sun-rise	Moonrise				
	G.H.A.	Dec.	G.H.A.	p	Dec.	d	H.P.		Naut.	Civil		26	27	28	29	
d h	°	'	°	'	°	'		°	h m	h m	h m	h m	h m	h m	h m	h m
SUNDAY	26 00	178 31.1 N	2 01.6	66 12.7	12.7	N 17 40.5	3.4	54.2	N 72	02 31	04 13	05 23	09 10	11 01	12 44	14 24
	01	193 31.3	02.6	80 44.4	12.6	17 37.1	3.4	54.2	N 70	02 59	04 25	05 28	10 06	11 35	13 06	14 38
	02	208 31.5	03.6	95 16.0	12.7	17 33.7	3.5	54.2	68	03 19	04 34	05 32	10 40	11 59	13 23	14 48
	03	223 31.7	04.6	109 47.7	12.7	17 30.2	3.6	54.2	66	03 35	04 42	05 35	11 04	12 18	13 36	14 57
	04	238 31.9	05.5	124 19.4	12.8	17 26.6	3.6	54.2	64	03 48	04 49	05 37	11 23	12 33	13 47	15 05
	05	253 32.1	06.5	138 51.2	12.7	17 23.0	3.8	54.2	62	03 59	04 54	05 39	11 38	12 45	13 57	15 11
	06	268 32.3	N 2 07.5	153 22.9	12.8	N 17 19.2	3.8	54.2	60	04 08	04 59	05 41	11 51	12 56	14 05	15 16
	07	283 32.4	08.5	167 54.7	12.8	17 15.4	3.9	54.2	N 58	04 15	05 04	05 43	12 02	13 05	14 12	15 21
	08	298 32.6	09.5	182 26.5	12.8	17 11.5	4.0	54.2	56	04 22	05 07	05 45	12 12	13 13	14 18	15 25
	09	313 32.8	10.4	196 58.3	12.8	17 07.5	4.0	54.2	54	04 28	05 10	05 46	12 20	13 20	14 24	15 29
	10	328 33.0	11.4	211 30.1	12.9	17 03.5	4.2	54.2	52	04 33	05 13	05 47	12 28	13 27	14 29	15 33
	11	343 33.2	12.4	226 02.0	12.9	16 59.3	4.2	54.2	50	04 37	05 16	05 48	12 34	13 33	14 33	15 36
	12	358 33.4	N 2 13.4	240 33.9	12.9	N 16 55.1	4.2	54.2	45	04 47	05 21	05 51	12 49	13 45	14 43	15 43
	13	13 33.6	14.4	255 05.8	12.9	16 50.9	4.4	54.2	N 40	04 54	05 26	05 53	13 01	13 56	14 51	15 48
	14	28 33.8	15.3	269 37.7	12.9	16 46.5	4.4	54.2	35	04 59	05 29	05 54	13 11	14 04	14 58	15 53
	15	43 34.0	16.3	284 09.6	13.0	16 42.1	4.5	54.2	30	05 04	05 32	05 56	13 20	14 12	15 04	15 58
	16	58 34.2	17.3	298 41.6	13.0	16 37.6	4.6	54.2	20	05 11	05 36	05 58	13 36	14 25	15 15	16 05
	17	73 34.4	18.3	313 13.6	13.0	16 33.0	4.7	54.2	N 10	05 15	05 39	06 00	13 49	14 37	15 24	16 12
	18	88 34.5	N 2 19.3	327 45.6	13.0	N 16 28.3	4.7	54.2	0	05 17	05 41	06 02	14 02	14 48	15 33	16 18
	19	103 34.7	20.3	342 17.6	13.1	16 23.6	4.8	54.2	S 10	05 19	05 43	06 04	14 15	14 59	15 42	16 24
	20	118 34.9	21.2	356 49.7	13.1	16 18.8	4.9	54.2	20	05 18	05 44	06 06	14 28	15 10	15 51	16 30
	21	133 35.1	22.2	11 21.8	13.0	16 13.9	4.9	54.2	30	05 16	05 44	06 07	14 43	15 24	16 01	16 38
	22	148 35.3	23.2	25 53.8	13.2	16 09.0	5.0	54.2	35	05 14	05 43	06 09	14 52	15 31	16 07	16 42
23	163 35.5	24.2	40 26.0	13.1	16 04.0	5.1	54.2	40	05 11	05 42	06 10	15 02	15 40	16 14	16 47	
MONDAY	27 00	178 35.7 N	2 25.2	54 58.1	13.1	N 15 58.9	5.2	54.2	S 50	05 03	05 40	06 12	15 28	16 02	16 32	16 59
	01	193 35.9	26.1	69 30.2	13.2	15 53.7	5.2	54.2	52	05 00	05 39	06 13	15 35	16 07	16 36	17 02
	02	208 36.1	27.1	84 02.4	13.2	15 48.5	5.3	54.2	54	04 57	05 39	06 14	15 42	16 14	16 41	17 05
	03	223 36.3	28.1	98 34.6	13.2	15 43.2	5.4	54.2	56	04 54	05 38	06 15	15 51	16 21	16 46	17 09
	04	238 36.5	29.1	113 06.8	13.3	15 37.8	5.4	54.2	58	04 50	05 36	06 15	16 00	16 28	16 52	17 13
	05	253 36.7	30.0	127 39.1	13.2	15 32.4	5.6	54.2	S 60	04 46	05 35	06 16	16 11	16 37	16 59	17 17
	06	268 36.8	N 2 31.0	142 11.3	13.3	N 15 26.8	5.6	54.2								
	07	283 37.0	32.0	156 43.6	13.3	15 21.2	5.6	54.2	Lat.	Sun-set	Twilight	Moonset				
	08	298 37.2	33.0	171 15.9	13.3	15 15.6	5.7	54.2			Civil	Naut.	26	27	28	29
	09	313 37.4	34.0	185 48.2	13.4	15 09.9	5.8	54.2	°	h m	h m	h m	h m	h m	h m	h m
	10	328 37.6	34.9	200 20.6	13.3	15 04.1	5.9	54.2	N 72	18 50	20 02	21 47	06 37	06 22	06 13	06 06
	11	343 37.8	35.9	214 52.9	13.4	14 58.2	5.9	54.2	N 70	18 45	19 49	21 17	05 40	05 47	05 50	05 51
	12	358 38.0	N 2 36.9	229 25.3	13.4	N 14 52.3	6.0	54.2	68	18 42	19 39	20 55	05 06	05 22	05 32	05 39
	13	13 38.2	37.9	243 57.7	13.4	14 46.3	6.1	54.2	66	18 38	19 31	20 39	04 42	05 03	05 18	05 29
	14	28 38.4	38.9	258 30.1	13.4	14 40.2	6.1	54.2	64	18 36	19 24	20 25	04 22	04 47	05 06	05 20
	15	43 38.6	39.8	273 02.5	13.5	14 34.1	6.2	54.2	62	18 33	19 18	20 15	04 07	04 34	04 56	05 13
	16	58 38.7	40.8	287 35.0	13.4	14 27.9	6.3	54.2	60	18 31	19 13	20 05	03 54	04 23	04 47	05 07
	17	73 38.9	41.8	302 07.4	13.5	14 21.6	6.3	54.3	N 58	18 29	19 09	19 57	03 42	04 13	04 39	05 01
	18	88 39.1	N 2 42.8	316 39.9	13.5	N 14 15.3	6.4	54.3	56	18 28	19 05	19 51	03 32	04 05	04 32	04 56
	19	103 39.3	43.7	331 12.4	13.5	14 08.9	6.4	54.3	54	18 26	19 02	19 45	03 23	03 57	04 26	04 52
	20	118 39.5	44.7	345 44.9	13.6	14 02.5	6.6	54.3	52	18 25	18 59	19 40	03 16	03 51	04 21	04 48
	21	133 39.7	45.7	0 17.5	13.5	13 55.9	6.5	54.3	50	18 24	18 56	19 35	03 09	03 44	04 16	04 44
	22	148 39.9	46.7	14 50.0	13.6	13 49.4	6.7	54.3	45	18 21	18 50	19 25	02 54	03 31	04 05	04 36
23	163 40.1	47.7	29 22.6	13.6	13 42.7	6.7	54.3	N 40	18 19	18 46	19 18	02 41	03 20	03 56	04 29	
TUESDAY	28 00	178 40.3 N	2 48.6	43 55.2	13.6	N 13 36.0	6.8	54.3	35	18 17	18 42	19 12	02 30	03 11	03 48	04 24
	01	193 40.5	49.6	58 27.8	13.6	13 29.2	6.8	54.3	30	18 16	18 39	19 08	02 22	03 03	03 42	04 19
	02	208 40.7	50.6	73 00.4	13.7	13 22.4	6.9	54.3	20	18 13	18 35	19 01	02 05	02 49	03 30	04 10
	03	223 40.8	51.6	87 33.1	13.6	13 15.5	6.9	54.3	N 10	18 11	18 32	18 56	01 51	02 36	03 20	04 02
	04	238 41.0	52.5	102 05.7	13.7	13 08.6	7.0	54.3	0	18 09	18 29	18 53	01 38	02 24	03 10	03 55
	05	253 41.2	53.5	116 38.4	13.7	13 01.6	7.1	54.4	S 10	18 07	18 28	18 52	01 25	02 12	03 00	03 47
	06	268 41.4	N 2 54.5	131 11.1	13.7	N 12 54.5	7.2	54.4	20	18 05	18 27	18 53	01 10	02 00	02 49	03 39
	07	283 41.6	55.5	145 43.8	13.7	12 47.3	7.1	54.4	30	18 03	18 27	18 55	00 54	01 45	02 37	03 30
	08	298 41.8	56.4	160 16.5	13.7	12 40.2	7.3	54.4	35	18 02	18 27	18 56	00 45	01 37	02 30	03 25
	09	313 42.0	57.4	174 49.2	13.7	12 32.9	7.3	54.4	40	18 01	18 28	18 59	00 34	01 27	02 22	03 19
	10	328 42.2	58.4	189 21.9	13.8	12 25.6	7.4	54.4	45	17 59	18 28	19 02	00 21	01 16	02 13	03 12
	11	343 42.4	2 59.4	203 54.7	13.8	12 18.2	7.4	54.4	S 50	17 58	18 30	19 07	00 05	01 02	02 02	03 03
	12	358 42.6	N 3 00.3	218 27.5	13.7	N 12 10.8	7.5	54.4	52	17 57	18 30	19 10	24 56	00 56	01 56	02 59
	13	13 42.7	01.3	233 00.2	13.8	12 03.3	7.5	54.4	54	17 56	18 31	19 12	24 48	00 48	01 50	02 55
	14	28 42.9	02.3	247 33.0	13.8	11 55.8	7.6	54.4	56	17 55	18 32	19 15	24 40	00 40	01 44	02 50
	15	43 43.1	03.3	262 05.8	13.9	11 48.2	7.7	54.5	58	17 54	18 33	19 19	24 31	00 31	01 37	02 45

		ARIES		VENUS -3.8		MARS +0.9		JUPITER -1.7		SATURN +0.9		STARS			
G.M.T.		G.H.A.		G.H.A. Dec.		G.H.A. Dec.		G.H.A. Dec.		G.H.A. Dec.		Name S.H.A. Dec.			
d	h	°	'	°	'	°	'	°	'	°	'	°	'	°	'
WEDNESDAY	29 00	186	09.4	163	19.6 N17 52.8	82	39.3 N25 19.1	241	31.5 S19 54.0	245	34.0 S20 27.6	Acamar	315 48.6	S 40 27.9	
	01	201	11.8	178	22.9 52.6	97	40.6 18.9	256	33.6 53.9	260	36.3 27.6	Achernar	335 56.7	S 57 26.2	
	02	216	14.3	193	26.2 52.4	112	42.0 18.8	271	35.7 53.8	275	38.6 27.6	Acrux	173 52.7	S 62 53.1	
	03	231	16.8	208	29.5 52.2	127	43.3 18.7	286	37.7 53.7	290	40.9 27.5	Adhara	255 43.5	S 28 55.5	
	04	246	19.2	223	32.9 51.9	142	44.7 18.5	301	39.8 53.6	305	43.2 27.5	Aldebaran	291 34.9	N 16 25.8	
	05	261	21.7	238	36.2 51.7	157	46.0 18.4	316	41.8 53.6	320	45.5 27.5				
	06	276	24.1	253	39.5 N17 51.5	172	47.4 N25 18.2	331	43.9 S19 53.5	335	47.8 S20 27.5	Alioth	166 54.8	N 56 10.2	
	07	291	26.6	268	42.9 51.2	187	48.7 18.1	346	46.0 53.4	350	50.1 27.4	Alkaid	153 29.6	N 49 30.3	
	08	306	29.1	283	46.2 51.0	202	50.1 17.9	1	48.0 53.3	5	52.4 27.4	Al Na'ir	28 33.6	S 47 08.9	
	09	321	31.5	298	49.5 50.8	217	51.4 17.8	16	50.1 53.2	20	54.7 27.4	Alnilam	276 26.5	S 1 13.8	
	10	336	34.0	313	52.9 50.5	232	52.8 17.7	31	52.1 53.1	35	57.0 27.3	Alphard	218 34.7	S 8 29.6	
	11	351	36.5	328	56.2 50.3	247	54.1 17.5	46	54.2 53.1	50	59.3 27.3				
	12	6	38.9	343	59.6 N17 50.0	262	55.5 N25 17.4	61	56.3 S19 53.0	66	01.6 S20 27.3	Alphecca	126 44.2	N 26 50.6	
	13	21	41.4	359	03.0 49.8	277	56.8 17.2	76	58.3 52.9	81	03.9 27.2	Alpheratz	358 24.7	N 28 52.4	
	14	36	43.9	14	06.3 49.5	292	58.1 17.1	92	00.4 52.8	96	06.2 27.2	Altair	62 46.8	N 8 45.8	
	15	51	46.3	29	09.7 49.3	307	59.5 17.0	107	02.5 52.7	111	08.5 27.2	Ankaa	353 55.1	S 42 31.1	
	16	66	48.8	44	13.0 49.0	323	00.8 16.8	122	04.5 52.7	126	10.8 27.2	Antares	113 14.5	S 26 20.7	
	17	81	51.2	59	16.4 48.7	338	02.2 16.7	137	06.6 52.6	141	13.1 27.1				
	18	96	53.7	74	19.8 N17 48.5	353	03.5 N25 16.5	152	08.6 S19 52.5	156	15.4 S20 27.1	Arcturus	146 31.5	N 19 23.0	
	19	111	56.2	89	23.2 48.2	8	04.9 16.4	167	10.7 52.4	171	17.7 27.1	Atria	108 51.6	S 68 57.2	
	20	126	58.6	104	26.5 47.9	23	06.2 16.2	182	12.8 52.3	186	20.0 27.0	Avior	234 33.8	S 59 23.4	
	21	142	01.1	119	29.9 47.7	38	07.6 16.1	197	14.8 52.3	201	22.3 27.0	Bellatrix	279 14.5	N 6 18.7	
	22	157	03.6	134	33.3 47.4	53	08.9 16.0	212	16.9 52.2	216	24.6 27.0	Betelgeuse	271 44.1	N 7 23.8	
	23	172	06.0	149	36.7 47.1	68	10.2 15.8	227	19.0 52.1	231	26.9 27.0				
THURSDAY	30 00	187	08.5	164	40.1 N17 46.8	83	11.6 N25 15.7	242	21.0 S19 52.0	246	29.2 S20 26.9	Canopus	264 13.7	S 52 40.9	
	01	202	11.0	179	43.5 46.5	98	12.9 15.5	257	23.1 51.9	261	31.5 26.9	Capella	281 33.0	N 45 57.6	
	02	217	13.4	194	46.9 46.3	113	14.3 15.4	272	25.2 51.8	276	33.8 26.9	Deneb	49 58.6	N 45 08.2	
	03	232	15.9	209	50.3 46.0	128	15.6 15.2	287	27.2 51.8	291	36.1 26.8	Denebola	183 13.6	N 14 47.3	
	04	247	18.4	224	53.7 45.7	143	16.9 15.1	302	29.3 51.7	306	38.4 26.8	Diphda	349 35.8	S 18 12.1	
	05	262	20.8	239	57.1 45.4	158	18.3 14.9	317	31.4 51.6	321	40.7 26.8				
	06	277	23.3	255	00.5 N17 45.1	173	19.6 N25 14.8	332	33.4 S19 51.5	336	43.0 S20 26.8	Dubhe	194 39.5	N 61 57.7	
	07	292	25.7	270	03.9 44.8	188	21.0 14.7	347	35.5 51.4	351	45.3 26.7	Elnath	279 02.6	N 28 34.5	
	08	307	28.2	285	07.4 44.5	203	22.3 14.5	2	37.6 51.4	6	47.6 26.7	Eltanin	91 04.4	N 51 29.4	
	09	322	30.7	300	10.8 44.2	218	23.6 14.4	17	39.6 51.3	21	49.9 26.7	Enif	34 26.1	N 9 41.7	
	10	337	33.1	315	14.2 43.9	233	25.0 14.2	32	41.7 51.2	36	52.2 26.6	Fomalhaut	16 07.8	S 29 49.7	
	11	352	35.6	330	17.6 43.6	248	26.3 14.1	47	43.8 51.1	51	54.5 26.6				
	12	7	38.1	345	21.1 N17 43.2	263	27.6 N25 13.9	62	45.8 S19 51.0	66	56.8 S20 26.6	Gacrux	172 44.3	S 56 53.8	
	13	22	40.5	0	24.5 42.9	278	29.0 13.8	77	47.9 51.0	81	59.1 26.6	Gienah	176 32.6	S 17 19.7	
	14	37	43.0	15	27.9 42.6	293	30.3 13.6	92	50.0 50.9	97	01.4 26.5	Hadar	149 43.3	S 60 11.1	
	15	52	45.5	30	31.4 42.3	308	31.7 13.5	107	52.0 50.8	112	03.7 26.5	Hamal	328 45.6	N 23 16.6	
	16	67	47.9	45	34.8 42.0	323	33.0 13.3	122	54.1 50.7	127	06.0 26.5	Kaus Aust.	84 36.1	S 34 24.1	
	17	82	50.4	60	38.3 41.6	338	34.3 13.2	137	56.2 50.6	142	08.3 26.4				
	18	97	52.8	75	41.7 N17 41.3	353	35.7 N25 13.0	152	58.2 S19 50.5	157	10.6 S20 26.4	Kochab	137 17.4	N 74 18.8	
	19	112	55.3	90	45.2 41.0	8	37.0 12.9	168	00.3 50.5	172	12.9 26.4	Markab	14 18.0	N 14 59.6	
	20	127	57.8	105	48.6 40.6	23	38.3 12.8	183	02.4 50.4	187	15.2 26.4	Menkar	314 56.6	N 3 56.1	
	21	143	00.2	120	52.1 40.3	38	39.7 12.6	198	04.4 50.3	202	17.5 26.3	Menkent	148 53.8	S 36 10.7	
	22	158	02.7	135	55.6 40.0	53	41.0 12.5	213	06.5 50.2	217	19.8 26.3	Miaplacidus	221 47.4	S 69 33.8	
	23	173	05.2	150	59.0 39.6	68	42.3 12.3	228	08.6 50.1	232	22.1 26.3				
FRIDAY	31 00	188	07.6	166	02.5 N17 39.3	83	43.7 N25 12.2	243	10.6 S19 50.1	247	24.4 S20 26.2	Mirfak	309 37.3	N 49 43.4	
	01	203	10.1	181	06.0 38.9	98	45.0 12.0	258	12.7 50.0	262	26.7 26.2	Nunki	76 47.2	S 26 20.7	
	02	218	12.6	196	09.5 38.6	113	46.3 11.9	273	14.8 49.9	277	29.0 26.2	Peacock	54 21.7	S 56 51.4	
	03	233	15.0	211	12.9 38.2	128	47.6 11.7	288	16.9 49.8	292	31.3 26.2	Pollux	244 15.9	N 28 07.2	
	04	248	17.5	226	16.4 37.9	143	49.0 11.6	303	18.9 49.7	307	33.6 26.1	Procyon	245 41.0	N 5 19.3	
	05	263	20.0	241	19.9 37.5	158	50.3 11.4	318	21.0 49.7	322	35.9 26.1				
	06	278	22.4	256	23.4 N17 37.2	173	51.6 N25 11.3	333	23.1 S19 49.6	337	38.2 S20 26.1	Rasalhague	96 43.0	N 12 35.1	
	07	293	24.9	271	26.9 36.8	188	53.0 11.1	348	25.1 49.5	352	40.5 26.1	Regulus	208 25.3	N 12 09.3	
	08	308	27.3	286	30.4 36.4	203	54.3 11.0	3	27.2 49.4	7	42.8 26.0	Rigel	281 50.1	S 8 15.0	
	09	323	29.8	301	33.9 36.1	218	55.6 10.8	18	29.3 49.3	22	45.1 26.0	Rigel Kent.	140 45.1	S 60 40.4	
	10	338	32.3	316	37.4 35.7	233	56.9 10.7	33	31.4 49.3	37	47.4 26.0	Sabik	102 57.7	S 15 40.6	
	11	353	34.7	331	40.9 35.3	248	58.3 10.5	48	33.4 49.2	52	49.7 25.9				
	12	8	37.2	346	44.4 N17 35.0	263	59.6 N25 10.4	63	35.5 S19 49.1	67	52.1 S20 25.9	Schedar	350 26.1	N 56 19.4	
	13	23	39.7	1	47.9 34.6	279	00.9 10.2	78	37.6 49.0	82	54.4 25.9	Shaula	97 15.4	S 37 04.4	
	14	38	42.1	16	51.4 34.2	294	02.2 10.1	93	39.7 48.9	97	56.7 25.9	Sirius	259 08.5	S 16 40.0	
	15	53	44.6	31	54.9 33.8	309	03.6 9.9	108	41.7 48.9	112	59.0 25.8	Spica	159 12.6	S 10 57.6	
	16	68	47.1	46	58.4 33.4	324	04.9 09.8	123	43.8 48.8	128	01.3 25.8	Suhail	223 21.2	S 43 16.8	
	17	83	49.5	62	01.9 33.0	339	06.2 09.6	138	45.9 48.7	143	03.6 25.8				
	18	98	52.0	77	05.5 N17 32.6	354	07.5 N25 09.5	153	47.9 S19 48.6	158	05.9 S20 25.7	Vega	81 05.7	N 38 44.6	
	19	113	54.4	92	09.0 32.3	9	08.9 09.3	168	50.0 48.5	173	08.2 25.7	Zuben'ubi	137 48.9	S 15 52.9	
	20	128	56.9	107	12.5 31.9	24	10.2 09.2	183	52.1 48.5	188	10.5 25.7				
	21	143	59.4	122	16.1 31.5	39	11.5 09.0	198	54.2 48.4	203	12.8 25.7				
	22	159	01.8	137	19.6 31.1	54	12.8 08.9	213	56.2 48.3	218	15.1 25.6	Venus	337 31.6	12 58	
	23	174	04.3	152	23.1 30.7	69	14.2 08.7	228	58.3 48.2	233	17.4 25.6	Mars	256 03.1	18 26	
												S.H.A. Mer. Pass.			
Mer. Pass. 11 29.5		v 3.4 d 0.3		v 1.3 d 0.1		v 2.1 d 0.									

G.M.T.	SUN				MOON				Lat.	Twilight		Sun-rise	Moonrise			
	G.H.A.	Dec.	G.H.A.	Dec.	H.P.	Naut.	Civil	29		30	31		I			
d h	° ' "	° ' "	° ' "	° ' "	° ' "	° ' "	° ' "	° ' "	h m	h m	h m	h m	h m	h m	h m	
WEDNESDAY	29 00	178 44.8 N	3 12.0	33 01.6 13.9	N 10 37.4	8.1	54.6	N 72	02 03	03 55	05 08	14 24	16 03	17 43	19 25	
	01	193 45.0	13.0	47 34.5 13.9	10 29.3	8.2	54.6	N 70	02 38	04 09	05 14	14 38	16 10	17 44	19 19	
	02	208 45.2	14.0	62 07.4 14.0	10 21.1	8.2	54.6	68	03 02	04 21	05 19	14 48	16 15	17 44	19 15	
	03	223 45.4	15.0	76 40.4 13.9	10 12.9	8.3	54.6	66	03 21	04 30	05 23	14 57	16 20	17 44	19 11	
	04	238 45.6	15.9	91 13.3 14.0	10 04.6	8.3	54.6	64	03 35	04 38	05 27	15 05	16 24	17 45	19 07	
	05	253 45.8	16.9	105 46.3 13.9	9 56.3	8.4	54.6	62	03 47	04 44	05 30	15 11	16 27	17 45	19 04	
	06	268 46.0 N	3 17.9	120 19.2 14.0	N 9 47.9	8.4	54.7	N 58	04 06	04 55	05 35	15 21	16 32	17 45	19 00	
	07	283 46.2	18.9	134 52.2 14.0	9 39.5	8.5	54.7	56	04 13	04 59	05 37	15 25	16 34	17 45	18 58	
	08	298 46.4	19.8	149 25.2 13.9	9 31.0	8.5	54.7	54	04 20	05 03	05 38	15 29	16 36	17 45	18 56	
	09	313 46.6	20.8	163 58.1 14.0	9 22.5	8.5	54.7	52	04 25	05 06	05 40	15 33	16 38	17 45	18 54	
	10	328 46.7	21.8	178 31.1 14.0	9 14.0	8.6	54.7	50	04 30	05 09	05 42	15 36	16 40	17 46	18 53	
	11	343 46.9	22.8	193 04.1 14.0	9 05.4	8.7	54.7	45	04 41	05 16	05 45	15 43	16 44	17 46	18 49	
	12	358 47.1 N	3 23.7	207 37.1 14.0	N 8 56.7	8.7	54.7	N 40	04 49	05 21	05 48	15 48	16 47	17 46	18 47	
	13	13 47.3	24.7	222 10.1 14.0	8 48.0	8.7	54.8	35	04 55	05 25	05 50	15 53	16 49	17 46	18 44	
	14	28 47.5	25.7	236 43.1 14.0	8 39.3	8.8	54.8	30	05 00	05 28	05 52	15 58	16 51	17 46	18 42	
	15	43 47.7	26.7	251 16.1 14.0	8 30.5	8.8	54.8	20	05 08	05 34	05 56	16 05	16 55	17 47	18 39	
	16	58 47.9	27.6	265 49.1 14.0	8 21.7	8.9	54.8	N 10	05 13	05 38	05 59	16 12	16 59	17 47	18 36	
17	73 48.1	28.6	280 22.1 14.0	8 12.8	8.9	54.8	0	05 17	05 41	06 01	16 18	17 02	17 47	18 33		
THURSDAY	18	88 48.3 N	3 29.6	294 55.1 14.0	N 8 03.9	8.9	54.8	S 10	05 18	05 43	06 04	16 24	17 05	17 47	18 30	
	19	103 48.5	30.5	309 28.1 14.1	7 55.0	9.0	54.9	20	05 19	05 44	06 06	16 30	17 09	17 48	18 27	
	20	118 48.7	31.5	324 01.2 14.0	7 46.0	9.1	54.9	30	05 18	05 45	06 09	16 38	17 13	17 48	18 24	
	21	133 48.8	32.5	338 34.2 14.0	7 36.9	9.0	54.9	35	05 16	05 46	06 11	16 42	17 15	17 48	18 22	
	22	148 49.0	33.5	353 07.2 14.0	7 27.9	9.1	54.9	40	05 14	05 46	06 13	16 47	17 18	17 48	18 20	
	23	163 49.2	34.4	7 40.2 14.0	7 18.8	9.2	54.9	45	05 11	05 45	06 15	16 52	17 21	17 49	18 17	
	30 00	178 49.4 N	3 35.4	22 13.2 14.1	N 7 09.6	9.2	54.9	S 50	05 07	05 45	06 17	16 59	17 24	17 49	18 14	
	01	193 49.6	36.4	36 46.3 14.0	7 00.4	9.2	55.0	52	05 05	05 45	06 18	17 02	17 26	17 49	18 13	
	02	208 49.8	37.3	51 19.3 14.0	6 51.2	9.3	55.0	54	05 03	05 44	06 19	17 05	17 27	17 49	18 12	
	03	223 50.0	38.3	65 52.3 14.0	6 41.9	9.2	55.0	56	05 00	05 44	06 21	17 09	17 29	17 50	18 10	
	04	238 50.2	39.3	80 25.3 14.0	6 32.7	9.4	55.0	58	04 57	05 43	06 22	17 13	17 32	17 50	18 08	
	05	253 50.4	40.3	94 58.3 14.0	6 23.3	9.3	55.0	S 60	04 53	05 42	06 24	17 17	17 34	17 50	18 06	
	06	268 50.6 N	3 41.2	109 31.3 14.0	N 6 14.0	9.4	55.0	Lat.	Sun-set	Twilight		Moonset				
	07	283 50.7	42.2	124 04.3 14.0	6 04.6	9.5	55.1			Civil	Naut.	29	30	31	I	
	08	298 50.9	43.2	138 37.3 14.0	5 55.1	9.4	55.1	°	h m	h m	h m	h m	h m	h m	h m	
	09	313 51.1	44.1	153 10.3 14.0	5 45.7	9.5	55.1	N 72	19 04	20 18	22 15	06 06	05 59	05 53	05 46	
	10	328 51.3	45.1	167 43.3 14.0	5 36.2	9.6	55.1	N 70	18 58	20 03	21 37	05 51	05 51	05 50	05 49	
11	343 51.5	46.1	182 16.3 14.0	5 26.6	9.5	55.1	68	18 52	19 51	21 11	05 39	05 43	05 47	05 51		
12	358 51.7 N	3 47.1	196 49.3 14.0	N 5 17.1	9.6	55.2	66	18 48	19 42	20 52	05 29	05 37	05 45	05 53		
13	13 51.9	48.0	211 22.3 14.0	5 07.5	9.6	55.2	64	18 44	19 34	20 37	05 20	05 32	05 43	05 54		
14	28 52.1	49.0	225 55.3 13.9	4 57.9	9.7	55.2	62	18 41	19 27	20 24	05 13	05 28	05 42	05 55		
15	43 52.3	50.0	240 28.2 14.0	4 48.2	9.7	55.2	60	18 38	19 21	20 14	05 07	05 24	05 40	05 56		
16	58 52.5	50.9	255 01.2 13.9	4 38.5	9.7	55.2	N 58	18 36	19 16	20 05	05 01	05 21	05 39	05 57		
17	73 52.6	51.9	269 34.1 14.0	4 28.8	9.7	55.2	56	18 34	19 12	19 58	04 56	05 18	05 38	05 58		
18	88 52.8 N	3 52.9	284 07.1 13.9	N 4 19.1	9.8	55.3	54	18 32	19 08	19 51	04 52	05 15	05 37	05 59		
19	103 53.0	53.8	298 40.0 13.9	4 09.3	9.7	55.3	52	18 30	19 04	19 45	04 48	05 12	05 36	06 00		
20	118 53.2	54.8	313 12.9 13.9	3 59.6	9.9	55.3	50	18 28	19 01	19 40	04 44	05 10	05 35	06 00		
21	133 53.4	55.8	327 45.8 13.9	3 49.7	9.8	55.3	45	18 25	18 54	19 30	04 36	05 05	05 33	06 02		
22	148 53.6	56.8	342 18.7 13.9	3 39.9	9.8	55.3	N 40	18 22	18 49	19 21	04 29	05 01	05 32	06 03		
23	163 53.8	57.7	356 51.6 13.9	3 30.1	9.9	55.4	35	18 20	18 45	19 15	04 24	04 58	05 31	06 04		
FRIDAY	31 00	178 54.0 N	3 58.7	11 24.5 13.9	N 3 20.2	9.9	55.4	30	18 17	18 41	19 09	04 19	04 54	05 29	06 05	
	01	193 54.2	3 59.7	25 57.4 13.8	3 10.3	10.0	55.4	20	18 14	18 36	19 02	04 10	04 49	05 27	06 06	
	02	208 54.4	4 00.6	40 30.2 13.9	3 00.3	9.9	55.4	N 10	18 11	18 32	18 56	04 02	04 44	05 26	06 08	
	03	223 54.5	01.6	55 03.1 13.8	2 50.4	10.0	55.4	0	18 08	18 29	18 53	03 55	04 39	05 24	06 09	
	04	238 54.7	02.6	69 35.9 13.8	2 40.4	10.0	55.5	S 10	18 05	18 26	18 51	03 47	04 34	05 22	06 10	
	05	253 54.9	03.5	84 08.7 13.8	2 30.4	10.0	55.5	20	18 02	18 24	18 50	03 39	04 29	05 20	06 12	
	06	268 55.1 N	4 04.5	98 41.5 13.8	N 2 20.4	10.0	55.5	30	17 59	18 23	18 51	03 30	04 23	05 18	06 13	
	07	283 55.3	05.5	113 14.3 13.7	2 10.4	10.0	55.5	35	17 58	18 23	18 52	03 25	04 20	05 16	06 14	
	08	298 55.5	06.4	127 47.0 13.8	2 00.4	10.1	55.5	40	17 56	18 23	18 54	03 19	04 16	05 15	06 15	
	09	313 55.7	07.4	142 19.8 13.7	1 50.3	10.1	55.6	45	17 54	18 23	18 57	03 12	04 12	05 13	06 16	
	10	328 55.9	08.4	156 52.5 13.7	1 40.2	10.0	55.6	S 50	17 51	18 23	19 01	03 03	04 06	05 11	06 17	
	11	343 56.1	09.3	171 25.2 13.7	1 30.2	10.2	55.6	52	17 50	18 23	19 03	02 59	04 04	05 10	06 18	
	12	358 56.3 N	4 10.3	185 57.9 13.7	N 1 20.0	10.1	55.6	54	17 49	18 24	19 05	02 55	04 01	05 09	06 19	
	13	13 56.4	11.3	200 30.6 13.7	1 09.9	10.1	55.6	56	17 47	18 24	19 07	02 50	03 58	05 08	06 19	
	14	28 56.6	12.2	215 03.3 13.6	0 59.8	10.1	55.7	58	17 46	18 25	19 10	02 45	03 55	05 07	06 20	
	15	43 56.8	13.2	229 35.9 13.6	0 49.7	10.2	55.7	S 60	17 44	18 25	19 14	02 39	03 51	05 05	06 21	
	16	58 57.0	14.2	244 08.5 13.6	0 39.5	10.2	55.7	Day	SUN			MOON				
17	73 57.2	15.1	258 41.1 13.6	0 29.3	10.1	55.7	Eqn. of Time		Mer. Pass.	Mer. Upper	Pass. Lower	Age	Phase			
18	88 57.4 N	4 16.1	273 13.7 13.6	N 0 19.2	10.2	55.7	00 ^h	12 ^h								
19	103 57.6	17.1	287 46.3 13.5	N 0 09.0	10.2	55.8	m s	m s	h m	h m	h m	d				
20	118 57.8	18.0	302 18.8 13.5	S 0 01.2	10.2	55.8	05 01	04 52	12 05	22 28	10 06	13				
21	133 58.0	19.0	316 51.3 13.5	0 11.4	10.2	55.8	04 43	04 34	12 05	23 13	10 51	14				
22	148 58.1	20.0	331 23.8 13.5	0 21.6	10.3	55.8	04 24	04 15	12 04	23 58	11 35	15				
23	163 58.3	20.9	345 56.3 13.4	0 31.9	10.2	55.8										
S.D. 16.0 d 1.0													S.D. 14.9	15.0	15.2	

		ARIES		VENUS -3.6		MARS +0.9		JUPITER -1.7		SATURN +0.9		STARS				
G.M.T.		G.H.A.	G.H.A.	Dec.	G.H.A.	Dec.	G.H.A.	Dec.	G.H.A.	Dec.	G.H.A.	Dec.	Name	S.H.A.	Dec.	
d	h															
I	00	189 06.8	167 26.7	N17 30.2	84 15.5	N25 08.6	244 00.4	S19 48.1	248 19.7	S20 25.6	Acamar	315 48.7	S 40 27.9			
	01	204 09.2	182 30.2	29.8	99 16.8	08.4	259 02.5	48.1	263 22.0	25.6	Acchernar	335 56.7	S 57 26.2			
	02	219 11.7	197 33.8	29.4	114 18.1	08.3	274 04.6	48.0	278 24.3	25.5	Acrux	173 52.7	S 62 53.1			
	03	234 14.2	212 37.3	.. 29.0	129 19.4	.. 08.1	289 06.6	.. 47.9	293 26.6	.. 25.5	Adhara	255 43.5	S 28 55.5			
	04	249 16.6	227 40.9	28.6	144 20.8	08.0	304 08.7	47.8	308 28.9	25.5	Aldebaran	291 34.9	N 16 25.8			
05	264 19.1	242 44.4	28.2	159 22.1	07.8	319 10.8	47.8	323 31.2	25.4							
S	06	279 21.6	257 48.0	N17 27.7	174 23.4	N25 07.7	334 12.9	S19 47.7	338 33.6	S20 25.4	Alioth	166 54.8	N 56 10.2			
	07	294 24.0	272 51.5	27.3	189 24.7	07.5	349 14.9	47.6	353 35.9	25.4	Alkaid	153 29.5	N 49 30.3			
	08	309 26.5	287 55.1	26.9	204 26.0	07.4	4 17.0	47.5	8 38.2	25.4	Al Na'ir	28 33.6	S 47 08.1			
	09	324 28.9	302 58.7	.. 26.5	219 27.4	.. 07.2	19 19.1	.. 47.4	23 40.5	.. 25.3	Alnilam	276 26.5	S 1 13.8			
	10	339 31.4	318 02.2	26.0	234 28.7	07.0	34 21.2	47.4	38 42.8	25.3	Alphard	218 34.7	S 8 29.6			
T	11	354 33.9	333 05.8	25.6	249 30.0	06.9	49 23.2	47.3	53 45.1	25.3						
	12	9 36.3	348 09.4	N17 25.2	264 31.3	N25 06.7	64 25.3	S19 47.2	68 47.4	S20 25.2	Alphecca	126 44.2	N 26 50.6			
	13	24 38.8	3 13.0	24.7	279 32.6	06.6	79 27.4	47.1	83 49.7	25.2	Alpheratz	358 24.7	N 28 52.4			
	14	39 41.3	18 16.5	24.3	294 33.9	06.4	94 29.5	47.0	98 52.0	25.2	Altair	62 46.8	N 8 45.8			
	15	54 43.7	33 20.1	.. 23.8	309 35.3	.. 06.3	109 31.6	.. 47.0	113 54.3	.. 25.2	Ankaa	353 55.1	S 42 31.1			
R	16	69 46.2	48 23.7	23.4	324 36.6	06.1	124 33.6	46.9	128 56.6	25.1	Antares	113 14.5	S 26 20.7			
	17	84 48.7	63 27.3	22.9	339 37.9	06.0	139 35.7	46.8	143 58.9	25.1						
	18	99 51.1	78 30.9	N17 22.5	354 39.2	N25 05.8	154 37.8	S19 46.7	159 01.3	S20 25.1	Arcturus	146 31.4	N 19 23.0			
	19	114 53.6	93 34.5	22.0	9 40.5	05.7	169 39.9	46.6	174 03.6	25.1	Atria	108 51.5	S 68 57.2			
	20	129 56.0	108 38.1	21.5	24 41.8	05.5	184 42.0	46.6	189 05.9	25.0	Avior	234 33.9	S 59 23.4			
D	21	144 58.5	123 41.7	.. 21.1	39 43.1	.. 05.4	199 44.0	.. 46.5	204 08.2	.. 25.0	Bellatrix	279 14.5	N 6 18.7			
	22	160 01.0	138 45.3	20.6	54 44.5	05.2	214 46.1	46.4	219 10.5	25.0	Betelgeuse	271 44.1	N 7 23.8			
	23	175 03.4	153 48.9	20.2	69 45.8	05.0	229 48.2	46.3	234 12.8	24.9						
	2	00	190 05.9	168 52.5	N17 19.7	84 47.1	N25 04.9	244 50.3	S19 46.2	249 15.1	S20 24.9	Canopus	264 13.7	S 52 40.9		
	01	205 08.4	183 56.1	19.2	99 48.4	04.7	259 52.4	46.2	264 17.4	24.9	Capella	281 33.0	N 45 57.6			
A	02	220 10.8	198 59.7	18.7	114 49.7	04.6	274 54.4	46.1	279 19.7	24.9	Deneb	49 58.6	N 45 08.2			
	03	235 13.3	214 03.3	.. 18.3	129 51.0	.. 04.4	289 56.5	.. 46.0	294 22.0	.. 24.8	Denebola	183 13.6	N 14 47.3			
	04	250 15.8	229 07.0	17.8	144 52.3	04.3	304 58.6	45.9	309 24.4	24.8	Diphda	349 35.8	S 18 12.1			
	05	265 18.2	244 10.6	17.3	159 53.6	04.1	320 00.7	45.9	324 26.7	24.8						
	06	280 20.7	259 14.2	N17 16.8	174 54.9	N25 04.0	335 02.8	S19 45.8	339 29.0	S20 24.8	Dubhe	194 39.5	N 61 57.7			
S	07	295 23.2	274 17.8	16.3	189 56.3	03.8	350 04.9	45.7	354 31.3	24.7	Elmath	279 02.7	N 28 34.5			
	08	310 25.6	289 21.4	15.8	204 57.6	03.6	5 06.9	45.6	9 33.6	24.7	Eltanin	91 04.4	N 51 29.4			
	09	325 28.1	304 25.1	.. 15.3	219 58.9	.. 03.5	20 09.0	.. 45.5	24 35.9	.. 24.7	Enif	34 26.1	N 9 41.7			
	10	340 30.5	319 28.7	14.8	235 00.2	03.3	35 11.1	45.5	39 38.2	24.7	Fomalhaut	16 07.8	S 29 49.7			
	11	355 33.0	334 32.3	14.3	250 01.5	03.2	50 13.2	45.4	54 40.5	24.6						
T	12	10 35.5	349 36.0	N17 13.8	265 02.8	N25 03.0	65 15.3	S19 45.3	69 42.8	S20 24.6	Gacrux	172 44.3	S 56 53.8			
	13	25 37.9	4 39.6	13.3	280 04.1	02.9	80 17.4	45.2	84 45.2	24.6	Gienah	176 32.6	S 17 19.7			
	14	40 40.4	19 43.3	12.8	295 05.4	02.7	95 19.4	45.2	99 47.5	24.5	Hadar	149 43.3	S 60 11.1			
	15	55 42.9	34 46.9	.. 12.3	310 06.7	.. 02.5	110 21.5	.. 45.1	114 49.8	.. 24.5	Hamal	328 45.7	N 23 16.6			
	16	70 45.3	49 50.5	11.8	325 08.0	02.4	125 23.6	45.0	129 52.1	24.5	Kaus Aust.	84 36.1	S 34 24.1			
R	17	85 47.8	64 54.2	11.3	340 09.3	02.2	140 25.7	44.9	144 54.4	24.5						
	18	100 50.3	79 57.8	N17 10.8	355 10.6	N25 02.1	155 27.8	S19 44.8	159 56.7	S20 24.4	Kochab	137 17.4	N 74 18.8			
	19	115 52.7	95 01.5	10.3	10 11.9	01.9	170 29.9	44.8	174 59.0	24.4	Markab	14 17.9	N 14 59.6			
	20	130 55.2	110 05.2	09.7	25 13.2	01.8	185 31.9	44.7	190 01.3	24.4	Menkar	314 56.6	N 3 56.1			
	21	145 57.6	125 08.8	.. 09.2	40 14.6	.. 01.6	200 34.0	.. 44.6	205 03.7	.. 24.4	Menkent	148 53.8	S 36 10.7			
D	22	161 00.1	140 12.5	08.7	55 15.9	01.4	215 36.1	44.5	220 06.0	24.3	Miaplacidus	221 47.5	S 69 33.8			
	23	176 02.6	155 16.1	08.2	70 17.2	01.3	230 38.2	44.4	235 08.3	24.3						
	3	00	191 05.0	170 19.8	N17 07.6	85 18.5	N25 01.1	245 40.3	S19 44.4	250 10.6	S20 24.3	Mirfak	309 37.3	N 49 43.1		
	01	206 07.5	185 23.5	07.1	100 19.8	01.0	260 42.4	44.3	265 12.9	24.3	Nunki	76 47.2	S 26 20.7			
	02	221 10.0	200 27.1	06.6	115 21.1	00.8	275 45.5	44.2	280 15.2	24.2	Peacock	54 21.6	S 56 51.4			
A	03	236 12.4	215 30.8	.. 06.0	130 22.4	.. 00.6	290 46.6	.. 44.1	295 17.5	.. 24.2	Pollux	244 15.9	N 28 07.2			
	04	251 14.9	230 34.5	05.5	145 23.7	00.5	305 48.6	44.1	310 19.9	24.2	Procyon	245 41.0	N 5 19.3			
	05	266 17.4	245 38.2	04.9	160 25.0	00.3	320 50.7	44.0	325 22.2	24.2						
	06	281 19.8	260 41.8	N17 04.4	175 26.3	N25 00.2	335 52.8	S19 43.9	340 24.5	S20 24.1	Rasalhague	96 43.0	N 12 35.1			
	07	296 22.3	275 45.5	03.8	190 27.6	25 00.0	350 54.9	43.8	355 26.8	24.1	Regulus	208 25.3	N 12 09.4			
S	08	311 24.8	290 49.2	03.3	205 28.9	24 59.8	5 57.0	43.8	10 29.1	24.1	Rigel	281 50.1	S 8 15.0			
	09	326 27.2	305 52.9	.. 02.7	220 30.2	.. 59.7	20 59.1	.. 43.7	25 31.4	.. 24.1	Rigel Kent.	140 45.1	S 60 40.4			
	10	341 29.7	320 56.6	02.2	235 31.5	59.5	36 01.2	43.6	40 33.7	24.0	Sabik	102 57.7	S 15 40.6			
	11	356 32.1	336 00.3	01.6	250 32.8	59.3	51 03.3	43.5	55 36.1	24.0						
	12	11 34.6	351 03.9	N17 01.1	265 34.1	N24 59.2	66 05.3	S19 43.4	70 38.4	S20 24.0	Schedar	350 26.1	N 56 19.3			
T	13	26 37.1	6 07.6	17 00.5	280 35.4	59.0	81 07.4	43.4	85 40.7	23.9	Shaula	97 15.4	S 37 04.4			
	14	41 39.5	21 11.3	16 59.9	295 36.7	58.9	96 09.5	43.3	100 43.3	23.9	Sirius	259 08.6	S 16 40.0			
	15	56 42.0	36 15.0	.. 59.4	310 38.0	.. 58.7	111 11.6	.. 43.2	115 45.3	.. 23.9	Spica	159 12.6	S 10 57.6			
	16	71 44.5	51 18.7	58.8	325 39.3	58.5	126 13.7	43.1	130 47.6	23.9	Suhail	223 21.2	S 43 16.8			
	17	86 46.9	66 22.4	58.2	340 40.6	58.4	141 15.8	43.1	145 50.0	23.8						
R	18	101 49.4	81 26.1	N16 57.6	355 41.8	N24 58.2	156 17.9	S19 43.0	160 52.3	S20 23.8	Vega	81 05.7	N 38 44.6			
	19	116 51.9	96 29.8	57.1	10 43.1	58.0	171 20.0	42.9	175 54.6	23.8	Zuben'ubi	137 48.9	S 15 52.9			
	20	131 54.3	111 33.5	55.5	25 44.4	57.9	186 22.1	42.8	190 56.9	23.8						
	21	146 56.8	126 37.3	.. 55.9	40 45.7	.. 57.7	201 24.2	.. 42.7	205 59.2	.. 23.7						
	22	161 59.3	141 41.0	55.3	55 47.0	57.6	216 26.3	42.7	221 01.5	23.7	Venus	338 46.6	12 41			
M	23	177 01.7	156 44.7	54.7	70 48.3	57.4	231 28.3	42.6	236 03.9	23.7	Mars	254 41.2	18 19			
												Jupiter	54 44.4	7 40		
												Saturn	59 09.2	7 22		
Mer. Pass. 11 17.8		v	3.6	d 0.5	v	1.3	d 0.2	v	2.1	d 0.1	v	2.3	d 0.0			

G.M.T.		SUN		MOON				Lat.	Twilight		Sun-rise	Moonrise					
		G.H.A.	Dec.	G.H.A.	<i>v</i>	Dec.	<i>d</i>		H.P.	Naut.		Civil	1	2	3	4	
d	h	°	'	°	'	°	'	'	°	^h	^m	^h	^m	^h	^m	^h	^m
SATURDAY	00	178 58.5	N 4 21.9	0 28.7	13.4	S	0 42.1	10.2	55.9	N 72	01 28	03 36	04 52	19 25	21 11	23 03	25 04
	01	193 58.7	22.9	15 01.1	13.4		0 52.3	10.2	55.9	N 70	02 15	03 53	05 00	19 19	20 58	22 40	24 25
	02	208 58.9	23.8	29 33.5	13.4		1 02.5	10.3	55.9	68	02 44	04 07	05 06	19 15	20 48	22 23	23 59
	03	223 59.1	24.8	44 05.9	13.3		1 12.8	10.2	55.9	66	03 05	04 17	05 11	19 11	20 39	22 09	23 39
	04	238 59.3	25.8	58 38.2	13.3		1 23.0	10.2	56.0	64	03 22	04 26	05 16	19 07	20 32	21 57	23 22
	05	253 59.5	26.7	73 10.5	13.3		1 33.2	10.3	56.0	62	03 35	04 34	05 20	19 04	20 25	21 48	23 09
	06	268 59.6	N 4 27.7	87 42.8	13.3	S	1 43.5	10.2	56.0	60	03 47	04 40	05 23	19 02	20 20	21 39	22 58
	07	283 59.8	28.7	102 15.1	13.2		1 53.7	10.3	56.0	N 58	03 56	04 46	05 26	19 00	20 15	21 32	22 48
	08	299 00.0	29.6	116 47.3	13.2		2 04.0	10.2	56.0	56	04 04	04 51	05 29	18 58	20 11	21 25	22 39
	09	314 00.2	30.6	131 19.5	13.2		2 14.2	10.2	56.1	54	04 11	04 55	05 31	18 56	20 07	21 20	22 32
	10	329 00.4	31.6	145 51.7	13.1		2 24.4	10.3	56.1	52	04 18	04 59	05 33	18 54	20 04	21 15	22 25
	11	344 00.6	32.5	160 23.8	13.1		2 34.7	10.2	56.1	50	04 23	05 03	05 35	18 53	20 01	21 10	22 19
	12	359 00.8	N 4 33.5	174 55.9	13.1	S	2 44.9	10.2	56.1	45	04 35	05 10	05 39	18 49	19 54	21 00	22 06
	13	14 01.0	34.5	189 28.0	13.1		2 55.1	10.2	56.1	N 40	04 43	05 16	05 43	18 47	19 49	20 52	21 55
	14	29 01.1	35.4	204 00.1	13.0		3 05.3	10.2	56.2	35	04 51	05 21	05 46	18 44	19 44	20 45	21 46
	15	44 01.3	36.4	218 32.1	13.0		3 15.5	10.2	56.2	30	04 56	05 24	05 49	18 42	19 40	20 39	21 38
	16	59 01.5	37.3	233 04.1	12.9		3 25.7	10.2	56.2	20	05 05	05 31	05 53	18 39	19 33	20 28	21 24
	17	74 01.7	38.3	247 36.0	12.9		3 35.9	10.2	56.2	N 10	05 11	05 36	05 57	18 36	19 26	20 18	21 12
	18	89 01.9	N 4 39.3	262 07.9	12.9	S	3 46.1	10.2	56.3	0	05 16	05 40	06 00	18 33	19 20	20 10	21 01
	19	104 02.1	40.2	276 39.8	12.8		3 56.3	10.1	56.3	S 10	05 18	05 43	06 04	18 30	19 14	20 01	20 50
	20	119 02.3	41.2	291 11.6	12.8		4 06.4	10.2	56.3	20	05 20	05 45	06 07	18 27	19 08	19 52	20 38
	21	134 02.5	42.2	305 43.4	12.8		4 16.6	10.1	56.3	30	05 20	05 47	06 11	18 24	19 01	19 41	20 24
	22	149 02.6	43.1	320 15.2	12.8		4 26.7	10.2	56.3	35	05 19	05 48	06 13	18 22	18 57	19 35	20 17
23	164 02.8	44.1	334 47.0	12.6		4 36.9	10.1	56.4	40	05 17	05 49	06 16	18 20	18 53	19 28	20 08	
2	179 03.0	N 4 45.1	349 18.6	12.7	S	4 47.0	10.1	56.4	45	05 15	05 49	06 18	18 17	18 48	19 20	19 58	
01	194 03.2	46.0	3 50.3	12.6		4 57.1	10.0	56.4	S 50	05 12	05 49	06 22	18 14	18 41	19 11	19 45	
02	209 03.4	47.0	18 21.9	12.6		5 07.1	10.1	56.4	52	05 11	05 50	06 23	18 13	18 38	19 07	19 39	
03	224 03.6	47.9	32 53.5	12.6		5 17.2	10.0	56.4	54	05 09	05 50	06 25	18 12	18 35	19 02	19 33	
04	239 03.8	48.9	47 25.1	12.5		5 27.2	10.1	56.5	56	05 06	05 50	06 27	18 10	18 32	18 57	19 26	
05	254 04.0	49.9	61 56.6	12.4		5 37.3	10.0	56.5	58	05 04	05 50	06 29	18 08	18 28	18 51	19 18	
06	269 04.1	N 4 50.8	76 28.0	12.5	S	5 47.3	10.0	56.5	S 60	05 01	05 49	06 31	18 06	18 24	18 44	19 09	
07	284 04.3	51.8	90 59.5	12.4		5 57.3	9.9	56.5									
08	299 04.5	52.7	105 30.9	12.3		6 07.2	10.0	56.5	Lat.	Sun-set	Twilight	Moonset					
09	314 04.7	53.7	120 02.2	12.3		6 17.2	9.9	56.6			Civil	Naut.	1	2	3	4	
10	329 04.9	54.7	134 33.5	12.3		6 27.1	9.9	56.6	°	^h	^m	^h	^m	^h	^m	^h	^m
11	344 05.1	55.6	149 04.8	12.2		6 37.0	9.8	56.6	N 72	19 18	20 35	22 52	05 46	05 40	05 32	05 24	
12	359 05.3	N 4 56.6	163 36.0	12.1	S	6 46.8	9.9	56.6	N 70	19 10	20 17	21 59	05 49	05 48	05 48	05 48	
13	14 05.5	57.5	178 07.1	12.2		6 56.7	9.8	56.7	68	19 03	20 04	21 28	05 51	05 55	06 00	06 07	
14	29 05.6	58.5	192 38.3	12.1		7 06.5	9.8	56.7	66	18 58	19 53	21 06	05 53	06 00	06 09	06 22	
15	44 05.8	5 59.5	207 09.4	12.0		7 16.3	9.7	56.7	64	18 53	19 43	20 48	05 54	06 05	06 18	06 34	
16	59 06.0	5 00.4	221 40.4	12.0		7 26.0	9.8	56.7	62	18 49	19 36	20 35	05 55	06 09	06 25	06 45	
17	74 06.2	01.4	236 11.4	12.0		7 35.8	9.7	56.7	60	18 46	19 29	20 23	05 56	06 13	06 31	06 54	
18	89 06.4	N 5 02.3	250 42.4	11.9	S	7 45.5	9.6	56.8	N 58	18 43	19 23	20 13	05 57	06 16	06 37	07 02	
19	104 06.6	03.3	265 13.3	11.8		7 55.1	9.7	56.8	56	18 40	19 18	20 05	05 58	06 19	06 42	07 09	
20	119 06.8	04.3	279 44.1	11.8		8 04.8	9.6	56.8	54	18 37	19 14	19 58	05 59	06 21	06 46	07 15	
21	134 06.9	05.2	294 14.9	11.8		8 14.4	9.5	56.8	52	18 35	19 10	19 51	06 00	06 24	06 50	07 21	
22	149 07.1	06.2	308 45.7	11.7		8 23.9	9.6	56.8	50	18 33	19 06	19 46	06 00	06 26	06 54	07 26	
23	164 07.3	07.1	323 16.4	11.7		8 33.5	9.4	56.9	45	18 29	18 58	19 34	06 02	06 31	07 02	07 37	
3	179 07.5	N 5 08.1	337 47.1	11.6	S	8 42.9	9.5	56.9	N 40	18 25	18 53	19 25	06 03	06 35	07 09	07 46	
01	194 07.7	09.1	352 17.7	11.6		8 52.4	9.4	56.9	35	18 22	18 47	19 18	06 04	06 38	07 15	07 54	
02	209 07.9	10.0	6 48.3	11.5		9 01.8	9.4	56.9	30	18 19	18 43	19 11	06 05	06 41	07 20	08 01	
03	224 08.1	11.0	21 18.8	11.5		9 11.2	9.3	56.9	20	18 15	18 37	19 03	06 06	06 46	07 28	08 13	
04	239 08.2	11.9	35 49.3	11.4		9 20.5	9.3	57.0	N 10	18 10	18 32	18 56	06 08	06 51	07 36	08 24	
05	254 08.4	12.9	50 19.7	11.4		9 29.8	9.3	57.0	0	18 07	18 28	18 52	06 09	06 55	07 44	08 34	
06	269 08.6	N 5 13.9	64 50.1	11.3	S	9 39.1	9.2	57.0	S 10	18 03	18 25	18 49	06 10	07 00	07 51	08 44	
07	284 08.8	14.8	79 20.4	11.3		9 48.3	9.2	57.0	20	18 00	18 22	18 47	06 12	07 04	07 59	08 55	
08	299 09.0	15.8	93 50.7	11.2		9 57.5	9.1	57.1	30	17 56	18 20	18 47	06 13	07 10	08 08	09 07	
09	314 09.2	16.7	108 20.9	11.1		10 06.6	9.1	57.1	35	17 54	18 19	18 48	06 14	07 13	08 13	09 14	
10	329 09.4	17.7	122 51.0	11.2		10 15.7	9.0	57.1	40	17 51	18 18	18 49	06 15	07 16	08 19	09 22	
11	344 09.5	18.6	137 21.2	11.0		10 24.7	9.0	57.1	45	17 48	18 17	18 51	06 16	07 20	08 25	09 31	
12	359 09.7	N 5 19.6	151 51.2	11.0	S	10 33.7	8.9	57.1	S 50	17 45	18 17	18 54	06 17	07 25	08 34	09 43	
13	14 09.9	20.6	166 21.2	11.0		10 42.6	8.9	57.2	52	17 43	18 17	18 56	06 18	07 27	08 37	09 48	
14	29 10.1	211															

		ARIES		VENUS -3.4		MARS +1.0		JUPITER -1.7		SATURN +0.8		STARS													
G.M.T.		G.H.A.		G.H.A.		Dec.		G.H.A.		Dec.		G.H.A.		Dec.		Name	S.H.A.	Dec.							
d	h	°	'	°	'	°	'	°	'	°	'	°	'	°	'		°	'							
TUESDAY	00	192	04.2	171	48.4	N16	54.1	85	49.6	N24	57.2	246	30.4	S19	42.5	251	06.2	S20	23.7	Acamar	315	48.7	S	40	27.9
	01	207	06.6	186	52.1		53.5	100	50.9		57.1	261	32.5		42.4	266	08.5		23.6	Achernar	335	56.7	S	57	26.2
	02	222	09.1	201	55.8		52.9	115	52.2		56.9	276	34.6		42.4	281	10.8		23.6	Acrux	173	52.7	S	62	53.1
	03	237	11.6	216	59.6	..	52.3	130	53.5	..	56.7	291	36.7	..	42.3	296	13.1	..	23.6	Adhara	255	43.6	S	28	55.5
	04	252	14.0	232	03.3		51.7	145	54.8		56.6	306	38.8		42.2	311	15.4		23.6	Aldebaran	291	34.9	N	16	25.8
	05	267	16.5	247	07.0		51.1	160	56.1		56.4	321	40.9		42.1	326	17.8		23.5						
	06	282	19.0	262	10.7	N16	50.5	175	57.4	N24	56.2	336	43.0	S19	42.1	341	20.1	S20	23.5	Alioth	166	54.8	N	56	10.2
	07	297	21.4	277	14.5		49.9	190	58.7		56.1	351	45.1		42.0	356	22.4		23.5	Alkaid	153	29.5	N	49	30.3
	08	312	23.9	292	18.2		49.3	206	00.0		55.9	6	47.2		41.9	11	24.7		23.5	Al Na'ir	28	33.6	S	47	08.9
	09	327	26.4	307	21.9	..	48.7	221	01.2	..	55.8	21	49.3	..	41.8	26	27.0	..	23.4	Alnilam	276	26.6	S	1	13.8
	10	342	28.8	322	25.7		48.1	236	02.5		55.6	36	51.4		41.8	41	29.4		23.4	Alphard	218	34.7	S	8	29.6
	11	357	31.3	337	29.4		47.5	251	03.8		55.4	51	53.5		41.7	56	31.7		23.4						
	12	12	33.8	352	33.1	N16	46.8	266	05.1	N24	55.3	66	55.6	S19	41.6	71	34.0	S20	23.4	Alphecca	126	44.2	N	26	50.6
	13	27	36.2	7	36.9		46.2	281	06.4		55.1	81	57.7		41.5	86	36.3		23.3	Alpheratz	358	24.7	N	28	52.4
	14	42	38.7	22	40.6		45.6	296	07.7		54.9	96	59.8		41.4	101	38.6		23.3	Altair	62	46.8	N	8	45.8
	15	57	41.1	37	44.3	..	45.0	311	09.0	..	54.8	112	01.8	..	41.4	116	41.0	..	23.3	Ankaa	353	55.1	S	42	31.1
	16	72	43.6	52	48.1		44.3	326	10.3		54.6	127	03.9		41.3	131	43.3		23.3	Antares	113	14.5	S	26	20.7
	17	87	46.1	67	51.8		43.7	341	11.6		54.4	142	06.0		41.2	146	45.6		23.2						
	18	102	48.5	82	55.6	N16	43.1	356	12.8	N24	54.3	157	08.1	S19	41.1	161	47.9	S20	23.2	Arcturus	146	31.4	N	19	23.0
	19	117	51.0	97	59.3		42.4	11	14.1		54.1	172	10.2		41.1	176	50.2		23.2	Atria	108	51.5	S	68	57.2
	20	132	53.5	113	03.1		41.8	26	15.4		53.9	187	12.3		41.0	191	52.6		23.2	Avior	234	33.9	S	59	23.4
	21	147	55.9	128	06.8	..	41.2	41	16.7	..	53.8	202	14.4	..	40.9	206	54.9	..	23.1	Bellatrix	279	14.5	N	6	18.7
	22	162	58.4	143	10.6		40.5	56	18.0		53.6	217	16.5		40.8	221	57.2		23.1	Betelgeuse	271	44.1	N	7	23.8
	23	178	00.9	158	14.4		39.9	71	19.3		53.4	232	18.6		40.8	236	59.5		23.1						
WEDNESDAY	00	193	03.3	173	18.1	N16	39.2	86	20.6	N24	53.3	247	20.7	S19	40.7	252	01.8	S20	23.1	Canopus	264	13.8	S	52	40.9
	01	208	05.8	188	21.9		38.6	101	21.9		53.1	262	22.8		40.6	267	04.2		23.0	Capella	281	33.0	N	45	57.6
	02	223	08.2	203	25.6		37.9	116	23.1		52.9	277	24.9		40.5	282	06.5		23.0	Deneb	49	58.5	N	45	08.2
	03	238	10.7	218	29.4	..	37.3	131	24.4	..	52.8	292	27.0	..	40.5	297	08.8	..	23.0	Denebola	183	13.6	N	14	47.3
	04	253	13.2	233	33.2		36.6	146	25.7		52.6	307	29.1		40.4	312	11.1		23.0	Diphda	349	35.8	S	18	12.1
	05	268	15.6	248	36.9		35.9	161	27.0		52.4	322	31.2		40.3	327	13.4		22.9						
	06	283	18.1	263	40.7	N16	35.3	176	28.3	N24	52.3	337	33.3	S19	40.2	342	15.8	S20	22.9	Dubhe	194	39.5	N	61	57.7
	07	298	20.6	278	44.5		34.6	191	29.6		52.1	352	35.4		40.2	357	18.1		22.9	Elnath	279	02.7	N	28	34.5
	08	313	23.0	293	48.2		33.9	206	30.8		51.9	7	37.5		40.1	12	20.4		22.9	Eltanin	91	04.3	N	51	29.4
	09	328	25.5	308	52.0	..	33.3	221	32.1	..	51.8	22	39.6	..	40.0	27	22.7	..	22.8	Enif	34	26.1	N	9	41.7
	10	343	28.0	323	55.8		32.6	236	33.4		51.6	37	41.7		39.9	42	25.1		22.8	Fomalhaut	16	07.8	S	29	49.7
	11	358	30.4	338	59.5		31.9	251	34.7		51.4	52	43.8		39.9	57	27.4		22.8						
	12	13	32.9	354	03.3	N16	31.2	266	36.0	N24	51.2	67	45.9	S19	39.8	72	29.7	S20	22.8	Gacrux	172	44.3	S	56	53.8
	13	28	35.4	9	07.1		30.6	281	37.2		51.1	82	48.0		39.7	87	32.0		22.7	Gienah	176	32.6	S	17	19.7
	14	43	37.8	24	10.9		29.9	296	38.5		50.9	97	50.1		39.6	102	34.3		22.7	Hadar	149	43.3	S	60	11.1
	15	58	40.3	39	14.7	..	29.2	311	39.8	..	50.7	112	52.2	..	39.6	117	36.7	..	22.7	Hamal	328	45.7	N	23	16.6
	16	73	42.7	54	18.4		28.5	326	41.1		50.6	127	54.3		39.5	132	39.0		22.7	Kaus Aust.	84	36.1	S	34	24.1
	17	88	45.2	69	22.2		27.8	341	42.4		50.4	142	56.4		39.4	147	41.3		22.6						
	18	103	47.7	84	26.0	N16	27.1	356	43.6	N24	50.2	157	58.5	S19	39.3	162	43.6	S20	22.6	Kochab	137	17.3	N	74	18.8
	19	118	50.1	99	29.8		26.5	11	44.9		50.0	173	00.6		39.3	177	46.0		22.6	Markab	14	17.9	N	14	59.6
	20	133	52.6	114	33.6		25.8	26	46.2		49.9	188	02.7		39.2	192	48.3		22.6	Menkar	314	56.6	N	3	56.1
	21	148	55.1	129	37.4	..	25.1	41	47.5	..	49.7	203	04.8	..	39.1	207	50.6	..	22.6	Menkent	148	53.8	S	36	10.7
	22	163	57.5	144	41.2		24.4	56	48.7		49.5	218	06.9		39.0	222	52.9		22.5	Miaplacidus	221	47.5	S	69	33.8
	23	179	00.0	159	45.0		23.7	71	50.0		49.4	233	09.0		39.0	237	55.3		22.5						
THURSDAY	00	194	02.5	174	48.8	N16	23.0	86	51.3	N24	49.2	248	11.1	S19	38.9	252	57.6	S20	22.5	Mirfak	309	37.3	N	49	43.4
	01	209	04.9	189	52.5		22.3	101	52.6		49.0	263	13.2		38.8	267	59.9		22.5	Nunki	76	47.2	S	26	20.6
	02	224	07.4	204	56.3		21.5	116	53.9		48.8	278	15.3		38.7	283	02.2		22.4	Peacock	54	21.6	S	56	51.4
	03	239	09.9	220	00.1	..	20.8	131	55.1	..	48.7	293	17.4	..	38.7	298	04.6	..	22.4	Pollux	244	15.9	N	28	07.2
	04	254	12.3	235	03.9		20.1	146	56.4		48.5	308	19.5		38.6	313	06.9		22.4	Procyon	245	41.0	N	5	19.3
	05	269	14.8	250	07.7		19.4	161	57.7		48.3	323	21.7		38.5	328	09.2		22.4						
	06	284	17.2	265	11.5	N16	18.7	176	59.0	N24	48.2	338	23.8	S19	38.4	343	11.5	S20	22.3	Rasalhague	96	43.0	N	12	35.1
	07	299	19.7	280	15.3		18.0	192	00.2		48.0	353	25.9		38.4	358	13.9		22.3	Regulus	208	25.3	N	12	09.4
	08	314	22.2	295	19.1		17.3	207	01.5		47.8	8	28.0		38.3	13	16.2		22.3	Rigel	281	50.1	S	8	15.0
	09	329	24.6	310	22.9	..	16.5	222	02.8	..	47.6	23	30.1	..	38.2	28	18.5	..	22.3	Rigel Kent.	140	45.0	S	60	40.4
	10	344	27.1	325	26.7		15.8	237	04.1		47.5	38	32.2		38.1	43	20.8		22.2	Sabik	102	57.7	S	15	40.6
	11	359	29.6	340	30.5		15.1	252	05.3		47.3	53	34.3		38.1	58	23.2		22.2						
	12	14	32.0	355	34.3	N16	14.3	267	06.6	N24	47.1	68	36.4	S19	38.0	73	25.5	S20	22.2	Schedar	350	26.1	N	56	19.3
	13	29	34.5	10	38.1		13.6	282	07.9		46.9	83	38.5		37.9	88	27.8		22.2	Shaula	97	15.4	S	37	04.4
	14	44	37.0	25	41.9		12.9	297	09.1		46.8	98	40.6		37.8	103	30.2		22.1	Sirius	259	08.6	S	16	40.0

G.M.T.		SUN		MOON				Lat.	Twilight		Sun-rise	Moonrise								
		G.H.A.	Dec.	G.H.A.	φ	Dec.	d		H.P.	Naut.		Civil	4	5	6	7				
d	h	°	'	°	'	°	'	°	'	h	m	h	m	h	m	h	m			
TUESDAY	4 00	179	12.0 N	5	31.1	325	47.8	10.4	S 12	17.3	8.3	57.4	N 72	00 23	03 17	04 36	25 04			
	01	194	12.1		32.0	340	17.2	10.3	12	25.6	8.2	57.4	N 70	01 48	03 37	04 46	24 25			
	02	209	12.3		33.0	354	46.5	10.3	12	33.8	8.1	57.4	68	02 24	03 52	04 53	23 59			
	03	224	12.5		33.9	9	15.8	10.2	12	41.9	8.1	57.4	66	02 49	04 05	05 00	23 39			
	04	239	12.7		34.9	23	45.0	10.1	12	50.0	8.0	57.5	64	03 08	04 15	05 05	23 22			
	05	254	12.9		35.8	38	14.1	10.1	12	58.0	8.0	57.5	62	03 23	04 23	05 10	23 09			
	06	269	13.1 N	5	36.8	52	43.2	10.0	S 13	06.0	7.8	57.5	60	03 36	04 31	05 14	22 58			
	07	284	13.2		37.7	67	12.2	10.0	13	13.8	7.8	57.5	N 58	03 46	04 37	05 18	22 48			
	08	299	13.4		38.7	81	41.2	9.9	13	21.6	7.8	57.5	56	03 55	04 43	05 21	22 39			
	09	314	13.6		39.6	96	10.1	9.9	13	29.4	7.7	57.5	54	04 03	04 47	05 24	22 32			
	10	329	13.8		40.6	110	39.0	9.8	13	37.1	7.6	57.6	52	04 10	04 52	05 26	22 25			
	11	344	14.0		41.6	125	07.8	9.7	13	44.7	7.5	57.6	50	04 16	04 56	05 29	22 19			
	12	359	14.2 N	5	42.5	139	36.5	9.7	S 13	52.2	7.5	57.6	45	04 29	05 04	05 34	22 06			
	13	14	14.3		43.5	154	05.2	9.7	13	59.7	7.4	57.6	N 40	04 38	05 11	05 38	21 55			
	14	29	14.5		44.4	168	33.9	9.5	14	07.1	7.3	57.6	35	04 46	05 16	05 42	21 46			
	15	44	14.7		45.4	183	02.4	9.6	14	14.4	7.2	57.7	30	04 53	05 21	05 45	21 38			
	16	59	14.9		46.3	197	31.0	9.4	14	21.6	7.2	57.7	20	05 02	05 28	05 50	21 24			
	17	74	15.1		47.3	211	59.4	9.4	14	28.8	7.0	57.7	N 10	05 09	05 34	05 55	21 12			
	18	89	15.3 N	5	48.2	226	27.8	9.4	S 14	35.8	7.1	57.7	0	05 15	05 39	06 00	21 01			
	19	104	15.4		49.2	240	56.2	9.3	14	42.9	6.9	57.7	S 10	05 18	05 43	06 04	20 50			
	20	119	15.6		50.1	255	24.5	9.2	14	49.8	6.8	57.8	20	05 20	05 46	06 08	20 38			
	21	134	15.8		51.1	269	52.7	9.2	14	56.6	6.8	57.8	30	05 21	05 50	06 16	20 17			
	22	149	16.0		52.0	284	20.9	9.2	15	03.4	6.7	57.8	40	05 20	05 52	06 19	20 08			
	23	164	16.2		53.0	298	49.1	9.0	15	10.1	6.6	57.8	45	05 19	05 53	06 22	19 58			
	WEDNESDAY	5 00	179	16.4 N	5	53.9	313	17.1	9.1	S 15	16.7	6.5	57.8	S 50	05 17	05 54	06 26	19 45		
01		194	16.5		54.9	327	45.2	8.9	15	23.2	6.4	57.9	52	05 16	05 55	06 28	19 39			
02		209	16.7		55.8	342	13.1	8.9	15	29.6	6.4	57.9	54	05 14	05 55	06 30	19 33			
03		224	16.9		56.8	356	41.0	8.9	15	36.0	6.2	57.9	56	05 12	05 56	06 33	19 26			
04		239	17.1		57.7	11	08.9	8.8	15	42.2	6.2	57.9	58	05 11	05 56	06 35	19 18			
05		254	17.3		58.7	25	36.7	8.8	15	48.4	6.1	57.9	S 60	05 08	05 56	06 38	19 09			
06		269	17.4 N	5	59.6	40	04.5	8.7	S 15	54.5	6.0	57.9		Lat.	Sun-set	Twilight	Moonset			
07		284	17.6		6 00.6	54	32.2	8.6	16	00.5	5.9	58.0					4	5		
08		299	17.8		01.5	68	59.8	8.6	16	06.4	5.8	58.0		h m	h m	h m	h m	h m		
09		314	18.0		02.5	83	27.4	8.5	16	12.2	5.7	58.0	N 72	19 33	20 53	///	05 24	05 11		
10		329	18.2		03.4	97	54.9	8.5	16	17.9	5.7	58.0	N 70	19 23	20 32	22 27	05 48	05 51		
11		344	18.4		04.4	112	22.4	8.4	16	23.6	5.5	58.0	68	19 15	20 16	21 47	06 07	06 18		
12		359	18.5 N	6	05.3	126	49.8	8.4	S 16	29.1	5.5	58.1	66	19 08	20 04	21 21	06 22	06 39		
13		14	18.7		06.3	141	17.2	8.3	16	34.6	5.3	58.1	64	19 02	19 53	21 01	06 34	06 56		
14		29	18.9		07.2	155	44.5	8.3	16	39.9	5.3	58.1	62	18 57	19 44	20 45	06 45	07 10		
15		44	19.1		08.2	170	11.8	8.2	16	45.2	5.1	58.1	60	18 53	19 37	20 32	06 54	07 22		
16		59	19.3		09.1	184	39.0	8.2	16	50.3	5.1	58.1	N 58	18 49	19 30	20 21	07 02	07 32		
17		74	19.4		10.1	199	06.2	8.1	16	55.4	4.9	58.1	56	18 46	19 25	20 12	07 09	07 41		
18		89	19.6 N	6	11.0	213	33.3	8.1	S 17	00.3	4.9	58.2	54	18 46	19 25	20 12	07 09	07 41		
19		104	19.8		12.0	228	00.4	8.0	17	05.2	4.8	58.2	52	18 43	19 19	20 04	07 15	07 49		
20		119	20.0		12.9	242	27.4	8.0	17	10.0	4.6	58.2	50	18 40	19 15	19 57	07 21	07 56		
21		134	20.2		13.9	256	54.4	7.9	17	14.6	4.6	58.2	52	18 40	19 15	19 57	07 21	07 56		
22		149	20.4		14.8	271	21.3	7.9	17	19.2	4.4	58.2	50	18 38	19 11	19 51	07 26	08 03		
23		164	20.5		15.7	285	48.2	7.8	17	23.6	4.4	58.2	45	18 32	19 02	19 38	07 37	08 16		
THURSDAY		6 00	179	20.7 N	6	16.7	300	15.0	7.8	S 17	28.0	4.2	58.3	N 40	18 28	18 56	19 28	07 46	08 28	
	01	194	20.9		17.6	314	41.8	7.8	17	32.2	4.2	58.3	35	18 24	18 50	19 20	07 54	08 38		
	02	209	21.1		18.6	329	08.6	7.7	17	36.4	4.0	58.3	30	18 21	18 45	19 14	08 01	08 46		
	03	224	21.3		19.5	343	35.3	7.6	17	40.4	4.0	58.3	20	18 15	18 38	19 03	08 13	09 01		
	04	239	21.4		20.5	358	01.9	7.6	17	44.4	3.8	58.3	N 10	18 10	18 32	18 56	08 24	09 14		
	05	254	21.6		21.4	12	28.5	7.6	17	48.2	3.7	58.3	0	18 06	18 27	18 51	08 34	09 27		
	06	269	21.8 N	6	22.4	26	55.1	7.5	S 17	51.9	3.7	58.4	S 10	18 02	18 23	18 47	08 44	09 39		
	07	284	22.0		23.3	41	21.6	7.5	17	55.6	3.5	58.4	20	17 57	18 19	18 45	08 55	09 52		
	08	299	22.2		24.3	55	48.1	7.4	17	59.1	3.4	58.4	30	17 52	18 16	18 44	09 07	10 07		
	09	314	22.3		25.2	70	14.5	7.4	18	02.5	3.3	58.4	35	17 49	18 15	18 44	09 14	10 15		
	10	329	22.5		26.1	84	40.9	7.4	18	05.8	3.1	58.4	40	17 46	18 13	18 45	09 22	10 25		
	11	344	22.7		27.1	99	07.3	7.3	18	08.9	3.1	58.4	45	17 43	18 12	18 46	09 31	10 37		
	12	359	22.9 N	6	28.0	113	33.6	7.2	S 18	12.0	3.0	58.5	S 50	17 38	18 11	18 48	09 43	10 51		
	13	14	23.1		29.0	127	59.8	7.3	18	15.0	2.8	58.5	52	17 36	18 10	18 49	09 48	10 58		
	14	29	23.2		29.9	142	26.1	7.2	18	17.8	2.7	58.5	54	17 34	18 09	18 50	09 54	11 05		
	15	44	23.4		30.9	156	52.3	7.1	18	20.5	2.7	58.5	56	17 32	18 09	18 52	10 01	11 13		
	16	59	23.6		31.8	171	18.4	7.2	18	23.2	2.5	58.5	58	17 29	18 08	18 54	10 08	11 23		
	17	74	23.8		32.7	185	44.6	7.0	18	25.7	2.4	58.5	S 60	17 26	18 08	18 56	10 16	11 33		
	18	89	23.9 N	6	33.7	200	10.6	7.1	S 18	28.1	2.2	58.6		Day	SUN	MOON				
	19	104	24.1		34.6	214	36.7	7.0	18	30.3	2.2	58.6		Eqn. of Time	Mer. Pass.	Mer. Upper				
	20	119	24.3		35.6	229	02.7	7.0	18	32.5	2.1	58.6		00h	12h	Pass. Lower				
	21	134	24.5		36.5	243	28.7	7.0	18	34.6	1.9	58.6	4	m s	m s	h m	h m	h m	d	
	22	149	24.7		37.5	257	54.7	6.9	18	36.5	1.8	58.6	5	03 13	03 04	12 03	02 22			

	ARIES	VENUS -3.2	MARS +1.0	JUPITER -1.7	SATURN +0.8	STARS			
G.M.T.	G.H.A.	G.H.A. Dec.	G.H.A. Dec.	G.H.A. Dec.	G.H.A. Dec.	Name	S.H.A.	Dec.	
d h	o ' "	o ' "	o ' "	o ' "	o ' "				
FRI DAY	7 00	195 01.6	176 20.1 N16 05.4	87 21.8 N24 45.0	249 01.7 S19 37.1	253 53.4 S20 21.9	Acamar	315 48.7 S 40 27.8	
	01	210 04.1	191 23.9 04.7	102 23.1 44.8	264 03.8 37.0	268 55.8 21.9	Achernar	335 56.7 S 57 26.2	
	02	225 06.5	206 27.7 03.9	117 24.4 44.7	279 05.9 37.0	283 58.1 21.9	Acrux	173 52.7 S 62 53.1	
	03	240 09.0	221 31.5 .. 03.1	132 25.6 .. 44.5	294 08.0 .. 36.9	299 00.4 .. 21.8	Adhara	255 43.6 S 28 55.5	
	04	255 11.5	236 35.3 02.4	147 26.9 44.3	309 10.1 36.8	314 02.8 21.8	Aldebaran	291 34.9 N 16 25.8	
	05	270 13.9	251 39.2 01.6	162 28.2 44.1	324 12.2 36.7	329 05.1 21.8			
	06	285 16.4	266 43.0 N16 00.8	177 29.4 N24 44.0	339 14.4 S19 36.7	344 07.4 S20 21.8	Alioth	166 54.8 N 56 10.2	
	07	300 18.8	281 46.8 16 00.1	192 30.7 43.8	354 16.5 36.6	359 09.7 21.8	Alkaid	153 29.5 N 49 30.3	
	08	315 21.3	296 50.6 15 59.3	207 32.0 43.6	9 18.6 36.5	14 12.1 21.7	Al Na'ir	28 33.6 S 47 08.9	
	09	330 23.8	311 54.4 .. 58.5	222 33.2 .. 43.4	24 20.7 .. 36.4	29 14.4 .. 21.7	Alnilam	276 26.6 S 1 13.8	
	10	345 26.2	326 58.3 57.7	237 34.5 43.3	39 22.8 36.4	44 16.7 21.7	Alphard	218 34.7 S 8 29.6	
	11	0 28.7	342 02.1 57.0	252 35.8 43.1	54 24.9 36.3	59 19.1 21.7			
	12	15 31.2	357 05.9 N15 56.2	267 37.0 N24 42.9	69 27.0 S19 36.2	74 21.4 S20 21.6	Alphecca	126 44.2 N 26 50.6	
	13	30 33.6	12 09.7 55.4	282 38.3 42.7	84 29.1 36.1	89 23.7 21.6	Alpheratz	358 24.7 N 28 52.4	
	14	45 36.1	27 13.6 54.6	297 39.6 42.5	99 31.3 36.1	104 26.1 21.6	Altair	62 46.8 N 8 45.8	
	15	60 38.6	42 17.4 .. 53.8	312 40.8 .. 42.4	114 33.4 .. 36.0	119 28.4 .. 21.6	Ankaa	353 55.0 S 42 31.1	
	16	75 41.0	57 21.2 53.0	327 42.1 42.2	129 35.5 35.9	134 30.7 21.5	Antares	113 14.5 S 26 20.7	
	17	90 43.5	72 25.0 52.3	342 43.4 42.0	144 37.6 35.9	149 33.0 21.5			
	18	105 46.0	87 28.9 N15 51.5	357 44.6 N24 41.8	159 39.7 S19 35.8	164 35.4 S20 21.5	Arcturus	146 31.4 N 19 23.0	
	19	120 48.4	102 32.7 50.7	12 45.9 41.6	174 41.8 35.7	179 37.7 21.5	Atria	108 51.4 S 68 57.2	
	20	135 50.9	117 36.5 49.9	27 47.1 41.5	189 43.9 35.6	194 40.0 21.5	Avior	234 33.9 S 59 23.4	
	21	150 53.3	132 40.4 .. 49.1	42 48.4 .. 41.3	204 46.0 .. 35.6	209 42.4 .. 21.4	Bellatrix	279 14.5 N 6 18.7	
	22	165 55.8	147 44.2 48.3	57 49.7 41.1	219 48.2 35.5	224 44.7 21.4	Betelgeuse	271 44.1 N 7 23.8	
	23	180 58.3	162 48.0 47.5	72 50.9 40.9	234 50.3 35.4	239 47.0 21.4			
SAT URDAY	8 00	196 00.7	177 51.9 N15 46.7	87 52.2 N24 40.7	249 52.4 S19 35.3	254 49.4 S20 21.4	Canopus	264 13.8 S 52 40.9	
	01	211 03.2	192 55.7 45.9	102 53.4 40.6	264 54.5 35.3	269 51.7 21.3	Capella	281 33.0 N 45 57.6	
	02	226 05.7	207 59.5 45.1	117 54.7 40.4	279 56.6 35.2	284 54.0 21.3	Deneb	49 58.5 N 45 08.2	
	03	241 08.1	223 03.4 .. 44.2	132 56.0 .. 40.2	294 58.7 .. 35.1	299 56.4 .. 21.3	Denebola	183 13.6 N 14 47.3	
	04	256 10.6	238 07.2 43.4	147 57.2 40.0	310 00.9 35.0	314 58.7 21.3	Diphda	349 35.8 S 18 12.1	
	05	271 13.1	253 11.0 42.6	162 58.5 39.8	325 03.0 35.0	330 01.0 21.2			
	06	286 15.5	268 14.8 N15 41.8	177 59.7 N24 39.7	340 05.1 S19 34.9	345 03.4 S20 21.2	Dubhe	194 39.5 N 61 57.7	
	07	301 18.0	283 18.7 41.0	193 01.0 39.5	355 07.2 34.8	0 05.7 21.2	Elmath	279 02.7 N 28 34.5	
	08	316 20.5	298 22.5 40.2	208 02.3 39.3	10 09.3 34.8	15 08.0 21.2	Eltanin	91 04.3 N 51 29.4	
	09	331 22.9	313 26.3 .. 39.4	223 03.5 .. 39.1	25 11.4 .. 34.7	30 10.4 .. 21.2	Enif	34 26.0 N 9 41.7	
	10	346 25.4	328 30.2 38.5	238 04.8 38.9	40 13.6 34.6	45 12.7 21.1	Fomalhaut	16 07.8 S 29 49.7	
	11	1 27.8	343 34.0 37.7	253 06.0 38.8	55 15.7 34.5	60 15.0 21.1			
	12	16 30.3	358 37.8 N15 36.9	268 07.3 N24 38.6	70 17.8 S19 34.5	75 17.4 S20 21.1	Gacrux	172 44.3 S 56 53.8	
	13	31 32.8	13 41.7 36.1	283 08.5 38.4	85 19.9 34.4	90 19.7 21.1	Gienah	176 32.6 S 17 19.7	
	14	46 35.2	28 45.5 35.2	298 09.8 38.2	100 22.0 34.3	105 22.0 21.0	Hadar	149 43.3 S 60 11.1	
	15	61 37.7	43 49.4 .. 34.4	313 11.1 .. 38.0	115 24.2 .. 34.3	120 24.4 .. 21.0	Hamal	328 45.7 N 23 16.6	
	16	76 40.2	58 53.2 33.6	328 12.3 37.8	130 26.3 34.2	135 26.7 21.0	Kaus Aust.	84 36.1 S 34 24.1	
	17	91 42.6	73 57.0 32.7	343 13.6 37.7	145 28.4 34.1	150 29.0 21.0			
	18	106 45.1	89 00.9 N15 31.9	358 14.8 N24 37.5	160 30.5 S19 34.0	165 31.4 S20 21.0	Kochab	137 17.3 N 74 18.8	
	19	121 47.6	104 04.7 31.1	13 16.1 37.3	175 32.6 34.0	180 33.7 20.9	Markab	14 17.9 N 14 59.6	
	20	136 50.0	119 08.5 30.2	28 17.3 37.1	190 34.7 33.9	195 36.0 20.9	Menkar	314 56.6 N 3 56.1	
	21	151 52.5	134 12.4 .. 29.4	43 18.6 .. 36.9	205 36.9 .. 33.8	210 38.4 .. 20.9	Menkent	148 53.8 S 36 10.8	
	22	166 54.9	149 16.2 28.5	58 19.8 36.7	220 39.0 33.8	225 40.7 20.9	Miaplacidus	221 47.6 S 69 33.8	
	23	181 57.4	164 20.1 27.7	73 21.1 36.6	235 41.1 33.7	240 43.1 20.8			
SUN DAY	9 00	196 59.9	179 23.9 N15 26.8	88 22.3 N24 36.4	250 43.2 S19 33.6	255 45.4 S20 20.8	Mirfak	309 37.3 N 49 43.4	
	01	212 02.3	194 27.7 26.0	103 23.6 36.2	265 45.4 33.5	270 47.7 20.8	Nunki	76 47.2 S 26 20.6	
	02	227 04.8	209 31.6 25.1	118 24.8 36.0	280 47.5 33.5	285 50.1 20.8	Peacock	54 21.6 S 56 51.4	
	03	242 07.3	224 35.4 .. 24.3	133 26.1 .. 35.8	295 49.6 .. 33.4	300 52.4 .. 20.8	Pollux	244 15.9 N 28 07.2	
	04	257 09.7	239 39.2 23.4	148 27.3 35.6	310 51.7 33.3	315 54.7 20.7	Procyon	245 41.0 N 5 19.3	
	05	272 12.2	254 43.1 22.6	163 28.6 35.5	325 53.8 33.3	330 57.1 20.7			
	06	287 14.7	269 46.9 N15 21.7	178 29.8 N24 35.3	340 56.0 S19 33.2	345 59.4 S20 20.7	Rasalhague	96 42.9 N 12 35.1	
	07	302 17.1	284 50.7 20.9	193 31.1 35.1	355 58.1 33.1	1 01.7 20.7	Regulus	208 25.3 N 12 09.4	
	08	317 19.6	299 54.6 20.0	208 32.3 34.9	11 00.2 33.0	16 04.1 20.6	Rigel	281 50.2 S 8 15.0	
	09	332 22.1	314 58.4 .. 19.1	223 33.6 .. 34.7	26 02.3 .. 33.0	31 06.4 .. 20.6	Rigel Kent.	140 45.0 S 60 40.4	
	10	347 24.5	330 02.3 18.3	238 34.8 34.5	41 04.5 32.9	46 08.8 20.6	Sabik	102 57.6 S 15 40.6	
	11	2 27.0	345 06.1 17.4	253 36.1 34.3	56 06.6 32.8	61 11.1 20.6			
	12	17 29.4	0 09.9 N15 16.5	268 37.3 N24 34.2	71 08.7 S19 32.8	76 13.4 S20 20.6	Schedar	350 26.1 N 56 19.3	
	13	32 31.9	15 13.8 15.7	283 38.6 34.0	86 10.8 32.7	91 15.8 20.5	Shaula	97 15.3 S 37 04.4	
	14	47 34.4	30 17.6 14.8	298 39.8 33.8	101 12.9 32.6	106 18.1 20.5	Sirius	259 08.6 S 16 40.0	
	15	62 36.8	45 21.4 .. 13.9	313 41.1 .. 33.6	116 15.1 .. 32.5	121 20.5 .. 20.5	Spica	159 12.5 S 10 57.6	
	16	77 39.3	60 25.3 13.1	328 42.3 33.4	131 17.2 32.5	136 22.8 20.5	Suhail	223 21.3 S 43 16.9	
	17	92 41.8	75 29.1 12.2	343 43.6 33.2	146 19.3 32.4	151 25.1 20.5			
	18	107 44.2	90 32.9 N15 11.3	358 44.8 N24 33.0	161 21.4 S19 32.3	166 27.5 S20 20.4	Vega	81 05.6 N 38 44.6	
	19	122 46.7	105 36.8 10.4	13 46.1 32.8	176 23.6 32.3	181 29.8 20.4	Zuben'ubi	137 48.9 S 15 52.9	
	20	137 49.2	120 40.6 09.6	28 47.3 32.7	191 25.7 32.2	196 32.2 20.4		S.H.A.	Mer. Pass.
	21	152 51.6	135 44.4 .. 08.7	43 48.6 .. 32.5	206 27.8 .. 32.1	211 34.5 .. 20.4	Venus	341 51.2 12 05	
	22	167 54.1	150 48.3 07.8	58 49.8 32.3	221 30.0 32.1	226 36.8 20.3	Mars	251 51.5 18 07	
	23	182 56.6	165 52.1 06.9	73 51.1 32.1	236 32.1 32.0	241 39.2 20.3	Jupiter	53 51.7 7 19	
Mer. Pass. 10 54.2							Saturn	58 48.7 7 00	

G.M.T.		SUN		MOON				Lat.	Twilight		Sun-rise	Moonrise								
		G.H.A.	Dec.	G.H.A.	<i>v</i>	Dec.	<i>d</i>		H.P.	Naut.		Civil	7	8	9	10				
d	h	°	'	°	'	°	'	°	'	h	m	h	m	h	m	h	m	h	m	
7	00	179	25.0	N 6	39.3	286	46.5	6.9	S 18	40.0	1.6	58.7	N 72	01 13	03 20	04 31	03 42	04 35	04 54	05 00
	01	194	25.2		40.3	301	12.4	6.8	18	41.6	1.5	58.7	68	02 02	03 38	04 41	02 51	03 46	04 18	04 36
	02	209	25.4		41.2	315	38.2	6.8	18	43.1	1.3	58.7	66	02 32	03 52	04 48	02 19	03 15	03 53	04 17
	03	224	25.5		42.2	330	04.0	6.8	18	44.4	1.2	58.7	64	02 53	04 03	04 55	01 55	02 52	03 33	04 02
	04	239	25.7		43.1	344	29.8	6.8	18	45.6	1.1	58.7	62	03 10	04 13	05 00	01 36	02 33	03 17	03 50
05	254	25.9		44.0	358	55.6	6.7	18	46.7	1.0	58.7	60	03 24	04 21	05 05	01 21	02 18	03 04	03 39	
06	269	26.1	N 6	45.0	13	21.3	6.7	S 18	47.7	0.9	58.7	N 58	03 36	04 28	05 09	01 08	02 05	02 52	03 29	
07	284	26.3		45.9	27	47.0	6.7	18	48.6	0.8	58.8	56	03 46	04 34	05 13	00 57	01 54	02 42	03 21	
08	299	26.4		46.9	42	12.7	6.6	18	49.4	0.6	58.8	54	03 54	04 40	05 16	00 47	01 44	02 33	03 14	
09	314	26.6		47.8	56	38.3	6.7	18	50.0	0.5	58.8	52	04 02	04 44	05 20	00 38	01 35	02 25	03 07	
F R I D A Y	10	329	26.8		48.7	71	04.0	6.6	18	50.5	0.4	58.8	50	04 09	04 49	05 22	00 30	01 27	02 18	03 01
	11	344	27.0		49.7	85	29.6	6.6	18	50.9	0.3	58.8	45	04 22	04 58	05 28	00 13	01 11	02 02	02 48
	12	359	27.1	N 6	50.6	99	55.2	6.6	S 18	51.2	0.1	58.8	N 40	04 33	05 06	05 34	00 00	00 57	01 50	02 37
	13	14	27.3		51.6	114	20.8	6.5	18	51.3	0.1	58.9	35	04 42	05 12	05 38	24 45	00 45	01 39	02 28
	14	29	27.5		52.5	128	46.3	6.6	18	51.4	0.1	58.9	30	04 49	05 17	05 42	24 36	00 36	01 30	02 20
15	44	27.7		53.4	143	11.9	6.5	18	51.3	0.2	58.9	20	05 00	05 26	05 48	24 18	00 18	01 13	02 06	
16	59	27.9		54.4	157	37.4	6.5	18	51.1	0.4	58.9	N 10	05 08	05 32	05 54	24 02	00 02	00 59	01 54	
17	74	28.0		55.3	172	02.9	6.6	18	50.7	0.4	58.9	0	05 14	05 38	05 59	23 48	24 46	00 46	01 42	
18	89	28.2	N 6	56.3	186	28.5	6.4	S 18	50.3	0.6	58.9	S 10	05 18	05 43	06 04	23 34	24 32	00 32	01 31	
19	104	28.4		57.2	200	53.9	6.5	18	49.7	0.7	58.9	20	05 21	05 47	06 09	23 18	24 18	00 18	01 19	
20	119	28.6		58.1	215	19.4	6.5	18	49.0	0.8	59.0	30	05 23	05 51	06 15	23 01	24 02	00 02	01 05	
21	134	28.7	6	59.1	229	44.9	6.4	18	48.2	1.0	59.0	35	05 23	05 53	06 18	22 51	23 52	24 57	00 57	
22	149	28.9	7	00.0	244	10.3	6.5	18	47.2	1.0	59.0	40	05 23	05 55	06 22	22 39	23 41	24 47	00 47	
23	164	29.1		00.9	258	35.8	6.4	18	46.2	1.2	59.0	45	05 23	05 56	06 26	22 26	23 28	24 36	00 36	
8	00	179	29.3	N 7	01.9	273	01.2	6.5	S 18	45.0	1.3	59.0	S 50	05 21	05 59	06 31	22 09	23 13	24 23	00 23
	01	194	29.4		02.8	287	26.7	6.4	18	43.7	1.5	59.0	52	05 20	06 00	06 33	22 01	23 06	24 17	00 17
	02	209	29.6		03.8	301	52.1	6.4	18	42.2	1.5	59.0	54	05 20	06 00	06 36	21 52	22 58	24 10	00 10
	03	224	29.8		04.7	316	17.5	6.4	18	40.7	1.7	59.0	56	05 18	06 01	06 39	21 43	22 48	24 02	00 02
	04	239	30.0		05.6	330	42.9	6.4	18	39.0	1.8	59.1	58	05 17	06 02	06 42	21 31	22 38	23 54	25 15
05	254	30.1		06.6	345	08.3	6.5	18	37.2	1.9	59.1	S 60	05 15	06 03	06 45	21 18	22 26	23 44	25 08	
06	269	30.3	N 7	07.5	359	33.8	6.4	S 18	35.3	2.0	59.1	Lat.		Sun-set	Twilight		Moonset			
07	284	30.5		08.4	13	59.2	6.4	18	33.3	2.2	59.1	Civil	Naut.	7	8	9	10			
08	299	30.7		09.4	28	24.6	6.4	18	31.1	2.3	59.1	°	h m	h m	h m	h m	h m	h m	h m	
09	314	30.8		10.3	42	50.0	6.4	18	28.8	2.4	59.1	N 72	19 47	21 13	22 06	06 25	07 32	08 13	09 34	
10	329	31.0		11.2	57	15.4	6.4	18	26.4	2.5	59.1	N 70	19 35	20 48	23 06	06 25	07 32	09 13	11 05	
11	344	31.2		12.2	71	40.8	6.4	18	23.9	2.6	59.1	68	19 26	20 30	22 09	07 16	08 20	09 48	11 28	
12	359	31.4	N 7	13.1	86	06.2	6.4	S 18	21.3	2.8	59.2	66	19 18	20 15	21 37	07 48	08 51	10 13	11 46	
13	14	31.5		14.0	100	31.6	6.5	18	18.5	2.9	59.2	64	19 11	20 03	21 14	08 12	09 14	10 32	12 00	
14	29	31.7		15.0	114	57.1	6.4	18	15.6	3.0	59.2	62	19 05	19 53	20 56	08 31	09 32	10 48	12 12	
15	44	31.9		15.9	129	22.5	6.4	18	12.6	3.1	59.2	60	19 00	19 45	20 42	08 46	09 48	11 01	12 22	
16	59	32.1		16.9	143	47.9	6.5	18	09.5	3.3	59.2	N 58	18 56	19 38	20 30	09 00	10 01	11 12	12 31	
17	74	32.2		17.8	158	13.4	6.4	18	06.2	3.3	59.2	56	18 52	19 31	20 20	09 11	10 12	11 22	12 39	
18	89	32.4	N 7	18.7	172	38.8	6.5	S 18	02.9	3.5	59.2	54	18 48	19 25	20 11	09 21	10 21	11 30	12 46	
19	104	32.6		19.7	187	04.3	6.5	17	59.4	3.6	59.2	52	18 45	19 20	20 03	09 30	10 30	11 38	12 52	
20	119	32.8		20.6	201	29.8	6.4	17	55.8	3.7	59.3	50	18 42	19 16	19 56	09 38	10 38	11 45	12 58	
21	134	32.9		21.5	215	55.2	6.5	17	52.1	3.9	59.3	45	18 36	19 06	19 42	09 55	10 54	12 00	13 09	
22	149	33.1		22.5	230	20.7	6.6	17	48.2	3.9	59.3	N 40	18 31	18 59	19 32	10 09	11 08	12 12	13 19	
23	164	33.3		23.4	244	46.3	6.5	17	44.3	4.1	59.3	35	18 27	18 52	19 23	10 20	11 19	12 22	13 28	
9	00	179	33.4	N 7	24.3	259	11.8	6.5	S 17	40.2	4.2	59.3	30	18 23	18 47	19 16	10 30	11 29	12 31	13 35
	01	194	33.6		25.2	273	37.3	6.6	17	36.0	4.3	59.3	20	18 16	18 38	19 05	10 48	11 46	12 47	13 48
	02	209	33.8		26.2	288	02.9	6.5	17	31.7	4.4	59.3	N 10	18 10	18 32	18 56	11 04	12 02	13 00	13 59
	03	224	34.0		27.1	302	28.4	6.6	17	27.3	4.5	59.3	0	18 05	18 26	18 50	11 18	12 16	13 13	14 09
	04	239	34.1		28.0	316	54.0	6.6	17	22.8	4.7	59.3	S 10	18 00	18 21	18 46	11 33	12 30	13 25	14 19
05	254	34.3		29.0	331	19.6	6.6	17	18.1	4.7	59.3	20	17 55	18 17	18 42	11 48	12 44	13 39	14 30	
06	269	34.5	N 7	29.9	345	45.2	6.7	S 17	13.4	4.9	59.4	30	17 49	18 13	18 40	12 05	13 01	13 54	14 43	
07	284	34.7		30.8	0	10.9	6.6	17	08.5	5.0	59.4	35	17 45	18 11	18 40	12 15	13 11	14 03	14 50	
08	299	34.8		31.8	14	36.5	6.7	17	03.5	5.1	59.4	40	17 42	18 09	18 40	12 27	13 22	14 12	14 58	
09	314	35.0		32.7	29	02.2	6.7	16	58.4	5.2	59.4	45	17 37	18 06	18 40	12 41	13 35	14 24	15 07	
10	329	35.2		33.6	43	27.9	6.7	16	53.2	5.3	59.4	S 50								

	ARIES			VENUS -3.1			MARS +1.1			JUPITER -1.8			SATURN +0.8			STARS					
G.M.T.	G.H.A.			Dec.			G.H.A.			Dec.			G.H.A.			Dec.			Name	S.H.A.	Dec.
d h	° ' "			° ' "			° ' "			° ' "			° ' "			° ' "					
MONDAY	00	197	59.0	180	56.0	N15 06.0	88	52.3	N24 31.9	251	34.2	S19 31.9	256	41.5	S20 20.3	Acamar	315	48.7	S 40 27.8		
	01	213	01.5	195	59.8	05.1	103	53.5	31.7	266	36.3	31.8	271	43.9	20.3	Achernar	335	56.7	S 57 26.2		
	02	228	03.9	211	03.6	04.2	118	54.8	31.5	281	38.5	31.8	286	46.2	20.3	Acrux	173	52.7	S 62 53.2		
	03	243	06.4	226	07.4	03.3	133	56.0	31.3	296	40.6	31.7	301	48.5	20.2	Adhara	255	43.6	S 28 55.5		
	04	258	08.9	241	11.3	02.5	148	57.3	31.1	311	42.7	31.6	316	50.9	20.2	Aldebaran	291	34.9	N 16 25.8		
	05	273	11.3	256	15.1	01.6	163	58.5	31.0	326	44.8	31.6	331	53.2	20.2						
	06	288	13.8	271	18.9	N15 00.7	178	59.8	N24 30.8	341	47.0	S19 31.5	346	55.6	S20 20.2	Alioth	166	54.8	N 56 10.2		
	07	303	16.3	286	22.8	14 59.8	194	01.0	30.6	356	49.1	31.4	1 57.9	20.2	Alkaid	153	29.5	N 49 30.4			
	08	318	18.7	301	26.6	58.9	209	02.2	30.4	11 51.2	31.4	17 00.2	20.1	Al Na'ir	28	33.6	S 47 08.9				
	09	333	21.2	316	30.4	58.0	224	03.5	30.2	26 53.4	31.3	32 02.6	20.1	Alnilam	276	26.6	S 1 13.8				
	10	348	23.7	331	34.2	57.1	239	04.7	30.0	41 55.5	31.2	47 04.9	20.1	Alphard	218	34.7	S 8 29.6				
	11	3 26.1	346	38.1	56.2	254	06.0	29.8	56 57.6	31.1	62 07.3	20.1									
	12	18	28.6	1 41.9	N14 55.3	269	07.2	N24 29.6	71 59.8	S19 31.1	77 09.6	S20 20.1	Alphecca	126	44.2	N 26 50.6					
	13	33	31.0	16 45.7	54.4	284	08.5	29.4	87 01.9	31.0	92 11.9	20.0	Alpheratz	358	24.7	N 28 52.4					
	14	48	33.5	31 49.6	53.5	299	09.7	29.2	102 04.0	30.9	107 14.3	20.0	Alzair	62	46.7	N 8 45.8					
	15	63	36.0	46 53.4	52.6	314	10.9	29.0	117 06.1	30.9	122 16.6	20.0	Ankaa	353	55.0	S 42 31.0					
	16	78	38.4	61 57.2	51.6	329	12.2	28.9	132 08.3	30.8	137 19.0	20.0	Antares	113	14.4	S 26 20.7					
	17	93	40.9	77 01.0	50.7	344	13.4	28.7	147 10.4	30.7	152 21.3	19.9									
	18	108	43.4	92 04.9	N14 49.8	359	14.7	N24 28.5	162 12.5	S19 30.7	167 23.7	S20 19.9	Arcturus	146	31.4	N 19 23.0					
	19	123	45.8	107 08.7	48.9	14 15.9	28.3	177 14.7	30.6	182 26.0	19.9	Atria	108	51.4	S 68 57.2						
	20	138	48.3	122 12.5	48.0	29 17.1	28.1	192 16.8	30.5	197 28.3	19.9	Avior	234	34.0	S 59 23.4						
	21	153	50.8	137 16.3	47.1	44 18.4	27.9	207 18.9	30.4	212 30.7	19.9	Bellatrix	279	14.5	N 6 18.7						
	22	168	53.2	152 20.1	46.2	59 19.6	27.7	222 21.1	30.4	227 33.0	19.8	Betelgeuse	271	44.1	N 7 23.8						
23	183	55.7	167 24.0	45.2	74 20.8	27.5	237 23.2	30.3	242 35.4	19.8											
TUESDAY	00	198	58.2	182	27.8	N14 44.3	89	22.1	N24 27.3	252	25.3	S19 30.2	257	37.7	S20 19.8	Canopus	264	13.8	S 52 40.9		
	01	214	00.6	197	31.6	43.4	104	23.3	27.1	267	27.5	30.2	272 40.1	19.8	Capella	281	33.0	N 45 57.6			
	02	229	03.1	212	35.4	42.5	119	24.6	26.9	282	29.6	30.1	287 42.4	19.8	Deneb	49	58.5	N 45 08.2			
	03	244	05.5	227	39.2	41.5	134	25.8	26.7	297	31.7	30.0	302 44.8	19.7	Denebola	183	13.6	N 14 47.3			
	04	259	08.0	242	43.1	40.6	149	27.0	26.5	312 33.9	30.0	317 47.1	19.7	Diphda	349	35.8	S 18 12.1				
	05	274	10.5	257 46.9	39.7	164	28.3	26.3	327 36.0	29.9	332 49.4	19.7									
	06	289	12.9	272	50.7	N14 38.8	179	29.5	N24 26.2	342	38.1	S19 29.8	347	51.8	S20 19.7	Dubhe	194	39.6	N 61 57.7		
	07	304	15.4	287	54.5	37.8	194	30.7	26.0	357 40.3	29.8	2 54.1	19.7	Elnath	279	02.7	N 28 34.5				
	08	319	17.9	302 58.3	36.9	209	32.0	25.8	12 42.4	29.7	17 56.5	19.6	Eltanin	91	04.3	N 51 29.4					
	09	334	20.3	318 02.1	36.0	224	33.2	25.6	27 44.5	29.6	32 58.8	19.6	Enif	34	26.0	N 9 41.7					
	10	349	22.8	333 05.9	35.0	239	34.4	25.4	42 46.7	29.5	48 01.2	19.6	Fomalhaut	16	07.8	S 29 49.7					
	11	4 25.3	348 09.7	34.1	254	35.7	25.2	57 48.8	29.5	63 03.5	19.6										
	12	19	27.7	3 13.5	N14 33.2	269	36.9	N24 25.0	72 51.0	S19 29.4	78 05.9	S20 19.6	Gacrux	172	44.3	S 56 53.9					
	13	34	30.2	18 17.4	32.2	284	38.1	24.8	87 53.1	29.3	93 08.2	19.5	Gienah	176	32.6	S 17 19.7					
	14	49	32.6	33 21.2	31.3	299	39.4	24.6	102 55.2	29.3	108 10.6	19.5	Hadar	149	43.3	S 60 11.1					
	15	64	35.1	48 25.0	30.4	314	40.6	24.4	117 57.4	29.2	123 12.9	19.5	Hamal	328	45.7	N 23 16.6					
	16	79	37.6	63 28.8	29.4	329	41.8	24.2	132 59.5	29.1	138 15.2	19.5	Kaus Aust.	84	36.0	S 34 24.1					
	17	94	40.0	78 32.6	28.5	344	43.1	24.0	148 01.6	29.1	153 17.6	19.5									
	18	109	42.5	93 36.4	N14 27.5	359	44.3	N24 23.8	163 03.8	S19 29.0	168 19.9	S20 19.4	Kochab	137	17.3	N 74 18.8					
	19	124	45.0	108 40.2	26.6	14 45.5	23.6	178 05.9	28.9	183 22.3	19.4	Markab	14	17.9	N 14 59.6						
	20	139	47.4	123 44.0	25.7	29 46.8	23.4	193 08.1	28.9	198 24.6	19.4	Menkar	314	56.6	N 3 56.1						
	21	154	49.9	138 47.8	24.7	44 48.0	23.2	208 10.2	28.8	213 27.0	19.4	Menkent	148	53.7	S 36 10.8						
	22	169	52.4	153 51.6	23.8	59 49.2	23.0	223 12.3	28.7	228 29.3	19.4	Miaplacidus	221	47.6	S 69 33.8						
23	184	54.8	168 55.4	22.8	74 50.5	22.8	238 14.5	28.7	243 31.7	19.3											
WEDNESDAY	00	199	57.3	183	59.2	N14 21.9	89	51.7	N24 22.6	253	16.6	S19 28.6	258	34.0	S20 19.3	Mirfak	309	37.3	N 49 43.4		
	01	214	59.8	199 03.0	20.9	104	52.9	22.4	268 18.7	28.5	273 36.4	19.3	Nunki	76	47.1	S 26 20.6					
	02	230	02.2	214 06.8	20.0	119	54.2	22.2	283 20.9	28.5	288 38.7	19.3	Peacock	54	21.5	S 56 51.4					
	03	245	04.7	229 10.6	19.0	134	55.4	22.0	298 23.0	28.4	303 41.1	19.3	Pollux	244	15.9	N 28 07.2					
	04	260	07.1	244 14.4	18.1	149	56.6	21.8	313 25.2	28.3	318 43.4	19.2	Procyon	245	41.0	N 5 19.3					
	05	275	09.6	259 18.2	17.1	164	57.8	21.6	328 27.3	28.3	333 45.8	19.2									
	06	290	12.1	274 22.0	N14 16.2	179	59.1	N24 21.4	343	29.5	S19 28.2	348	48.1	S20 19.2	Rasalhague	96	42.9	N 12 35.2			
	07	305	14.5	289 25.7	15.2	195	00.3	21.2	358 31.6	28.1	3 50.5	19.2	Regulus	208	25.3	N 12 09.4					
	08	320	17.0	304 29.5	14.3	210	01.5	21.0	13 33.7	28.1	18 52.8	19.2	Rigel	281	50.2	S 8 15.0					
	09	335	19.5	319 33.3	13.3	225	02.8	20.9	28 35.9	28.0	33 55.2	19.1	Rigel Kent.	140	45.0	S 60 40.4					
	10	350	21.9	334 37.1	12.3	240	04.0	20.7	43 38.0	27.9	48 57.5	19.1	Sabik	102	57.6	S 15 40.6					
	11	5 24.4	349 40.9	11.4	255	05.2	20.5	58 40.2	27.9	63 59.9	19.1										
	12	20	26.9	4 44.7	N14 10.4	270	06.4	N24 20.3	73 42.3	S19 27.8	79 02.2	S20 19.1	Schedar	350	26.1	N 56 19.3					
	13	35	29.3	19 48.4	09.5	285	07.7	20.1	88 44.4	27.7	94 04.6	19.1	Shaula	97	15.3	S 37 04.4					
	14	50	31.8	34 52.2	08.5	300	08.9	19.8	103 46.6	27.7	109 06.9	19.1	Sirius	259	08.6	S 16 40.0					
	15	65	34.3	49 56.0	07.5	315	10.1	19.6	118 48.7	27.6	124 09.3	19.0	Spica	159	12.5	S 10 57.6					
	16	80	36.7	64 59.8	06.6	330	11.3	19.4	133 50.9	27.5	139 11.6	19.0	Suhail	223	21.3	S 43 16.9					
	17	95	39.2	80 03.6	05.6	345	12.6	19.2	148 53.0	27.4	154 14.0	19.0									
	18	110	41.6	95 07.3	N14 04.6	0 13.8	N24 19.0	163	55.2	S19 27.4	169	16.3	S20 19.0	Vega	81	05.6	N 38 44.6				
	19	125	44.1	110 11.1	03.7	15 15.0	18.8	178 57.3	27.3	184 18.7	19.0	Zuben'ubi	137	48.8	S 15 52.9						
	20	140	46.6	125 14.9	02.7	30 16.2	18.6	193 59.5	27.2	199 21.0	18.9										
	21	155	49.0	140 18.7	01.7	45 17.5	18.4	209 01.6	27.2	214 23.4	18.9										
	22	170	51.5	155 22.4	14 00.8	60	18.7	18.2	224 03.7	27.1	229 25.7	18.9	Venus	343	29.6	11 47					
23	185	54.0	170 26.2	13 59.8	75	1															

G.M.T.	SUN		MOON				Lat.	Twilight		Sun-rise	Moonrise					
	G.H.A.	Dec.	G.H.A.	<i>v</i>	Dec.	<i>d</i>		H.P.	Naut.		Civil	10	11	12	13	
<i>d</i> ^{<i>h</i>}	^{<i>m</i>}	^{<i>s</i>}	^{<i>m</i>}	^{<i>s</i>}	^{<i>m</i>}	^{<i>s</i>}	^{<i>°</i>}	^{<i>h</i>}	^{<i>m</i>}	^{<i>h</i>}	^{<i>m</i>}	^{<i>h</i>}	^{<i>m</i>}	^{<i>h</i>}	^{<i>m</i>}	
MONDAY	10 00	179 37.6 N	7 46.6	245 30.2	7.1	S 15 28.9	6.8	59.5	N 72	///	02 34	04 03	05 32	05 21	05 13	05 06
	01	194 37.7	47.5	259 56.3	7.1	15 22.1	6.9	59.5	N 70	///	03 02	04 17	05 00	05 02	05 02	05 01
	02	209 37.9	48.5	274 22.4	7.2	15 15.2	7.0	59.5	68	01 36	03 22	04 28	04 36	04 46	04 53	04 58
	03	224 38.1	49.4	288 48.6	7.1	15 08.2	7.1	59.5	66	02 13	03 38	04 37	04 17	04 33	04 45	04 55
	04	239 38.3	50.3	303 14.7	7.3	15 01.1	7.2	59.5	64	02 38	03 51	04 44	04 02	04 23	04 39	04 52
	05	254 38.4	51.2	317 41.0	7.2	14 53.9	7.3	59.5	62	02 57	04 02	04 51	03 50	04 14	04 33	04 50
	06	269 38.6 N	7 52.2	332 07.2	7.3	14 46.6	7.4	59.5	60	03 13	04 11	04 56	03 39	04 06	04 28	04 48
	07	284 38.8	53.1	346 33.5	7.3	14 39.2	7.5	59.6	N 58	03 26	04 19	05 01	03 29	03 59	04 24	04 46
	08	299 38.9	54.0	0 59.8	7.3	14 31.7	7.6	59.6	56	03 37	04 26	05 05	03 21	03 53	04 20	04 45
	09	314 39.1	54.9	15 26.1	7.4	14 24.1	7.7	59.6	54	03 46	04 32	05 09	03 14	03 48	04 17	04 44
	10	329 39.3	55.9	29 52.5	7.4	14 16.4	7.7	59.6	52	03 54	04 37	05 13	03 07	03 43	04 14	04 44
	11	344 39.4	56.8	44 18.9	7.4	14 08.7	7.9	59.6	50	04 01	04 43	05 16	03 01	03 38	04 11	04 41
	12	359 39.6 N	7 57.7	58 45.3	7.5	14 00.8	7.9	59.6	45	04 16	04 53	05 23	02 48	03 28	04 05	04 38
	13	14 39.8	58.6	73 11.8	7.5	13 52.9	8.1	59.6	N 40	04 28	05 01	05 29	02 37	03 20	04 00	04 36
	14	29 39.9	59.6	87 38.3	7.5	13 44.8	8.1	59.6	35	04 37	05 08	05 34	02 28	03 13	03 55	04 34
	15	44 40.1	8 00.5	102 04.8	7.6	13 36.7	8.2	59.6	30	04 45	05 14	05 38	02 20	03 07	03 51	04 33
	16	59 40.3	01.4	116 31.4	7.6	13 28.5	8.3	59.6	20	04 57	05 23	05 45	02 06	02 56	03 44	04 30
	17	74 40.4	02.3	130 58.0	7.6	13 20.2	8.4	59.6	N 10	05 06	05 31	05 52	01 54	02 47	03 38	04 27
	18	89 40.6 N	8 03.3	145 24.6	7.7	13 11.8	8.5	59.6	0	05 13	05 37	05 58	01 42	02 38	03 32	04 25
	19	104 40.8	04.2	159 51.3	7.7	13 03.3	8.6	59.6	S 10	05 18	05 42	06 04	01 31	02 29	03 26	04 22
	20	119 40.9	05.1	174 18.0	7.8	12 54.7	8.6	59.6	20	05 22	05 47	06 09	01 19	02 20	03 20	04 20
	21	134 41.1	06.0	188 44.8	7.8	12 46.1	8.7	59.6	30	05 25	05 52	06 16	01 05	02 09	03 13	04 17
	22	149 41.3	07.0	203 11.6	7.8	12 37.4	8.8	59.6	35	05 25	05 55	06 20	00 57	02 03	03 09	04 15
	23	164 41.4	07.9	217 38.4	7.8	12 28.6	8.9	59.6	40	05 26	05 57	06 25	00 47	01 55	03 05	04 14
00	179 41.6 N	8 08.8	232 05.2	7.9	S 12 19.7	9.0	59.6	45	05 26	06 00	06 30	00 36	01 47	02 59	04 12	
01	194 41.8	09.7	246 32.1	7.9	12 10.7	9.0	59.6	S 50	05 26	06 03	06 36	00 23	01 37	02 53	04 09	
02	209 41.9	10.6	260 59.0	8.0	12 01.7	9.1	59.6	52	05 25	06 04	06 38	00 17	01 32	02 50	04 08	
03	224 42.1	11.6	275 26.0	8.0	11 52.6	9.2	59.6	54	05 25	06 06	06 41	00 10	01 27	02 47	04 07	
04	239 42.3	12.5	289 53.0	8.0	11 43.4	9.2	59.6	56	05 24	06 07	06 45	00 02	01 21	02 43	04 05	
05	254 42.4	13.4	304 20.0	8.1	11 34.2	9.4	59.6	58	05 23	06 09	06 48	25 15	01 15	02 39	04 04	
06	269 42.6 N	8 14.3	318 47.1	8.1	S 11 24.8	9.4	59.6	S 60	05 22	06 10	06 52	25 08	01 08	02 34	04 02	
07	284 42.8	15.2	333 14.2	8.2	11 15.4	9.5	59.6									
08	299 42.9	16.2	347 41.4	8.1	11 05.9	9.5	59.6	Lat.	Sun-set	Twilight		Moonset				
09	314 43.1	17.1	2 08.5	8.2	10 56.4	9.6	59.6			Civil	Naut.	10	11	12	13	
10	329 43.3	18.0	16 35.7	8.3	10 46.8	9.7	59.6	^{<i>°</i>}	^{<i>h</i>}	^{<i>m</i>}	^{<i>h</i>}	^{<i>m</i>}	^{<i>h</i>}	^{<i>m</i>}	^{<i>h</i>}	^{<i>m</i>}
11	344 43.4	18.9	31 03.0	8.3	10 37.1	9.7	59.6	N 72	20 02	21 34	///	10 34	12 40	14 40	16 37	
12	359 43.6 N	8 19.8	45 30.3	8.3	S 10 27.4	9.8	59.6	N 70	19 48	21 05	///	11 05	12 58	14 49	16 38	
13	14 43.8	20.7	59 57.6	8.4	10 17.6	9.9	59.6	68	19 37	20 43	22 36	11 28	13 12	14 57	16 39	
14	29 43.9	21.7	74 25.0	8.4	10 07.7	10.0	59.6	66	19 28	20 27	21 55	11 46	13 23	15 02	16 40	
15	44 44.1	22.6	88 52.4	8.4	9 57.7	10.0	59.6	64	19 20	20 14	21 28	12 00	13 33	15 07	16 41	
16	59 44.3	23.5	103 19.8	8.4	9 47.7	10.0	59.6	62	19 14	20 02	21 08	12 12	13 41	15 12	16 42	
17	74 44.4	24.4	117 47.2	8.5	9 37.7	10.1	59.6	60	19 08	19 53	20 52	12 22	13 48	15 15	16 43	
18	89 44.6 N	8 25.3	132 14.7	8.6	S 9 27.6	10.2	59.6	N 58	19 03	19 45	20 39	12 31	13 54	15 19	16 43	
19	104 44.8	26.3	146 42.3	8.5	9 17.4	10.2	59.6	56	18 58	19 38	20 28	12 39	14 00	15 22	16 44	
20	119 44.9	27.2	161 09.8	8.6	9 07.2	10.3	59.6	54	18 54	19 31	20 18	12 46	14 04	15 24	16 44	
21	134 45.1	28.1	175 37.4	8.7	8 56.9	10.4	59.6	52	18 50	19 26	20 10	12 52	14 09	15 27	16 45	
22	149 45.3	29.0	190 05.1	8.7	8 46.5	10.3	59.6	50	18 47	19 21	20 02	12 58	14 13	15 29	16 45	
23	164 45.4	29.9	204 32.8	8.7	8 36.2	10.5	59.6	45	18 40	19 10	19 47	13 09	14 21	15 34	16 46	
00	179 45.6 N	8 30.8	219 00.5	8.7	S 8 25.7	10.5	59.6	N 40	18 34	19 02	19 35	13 19	14 28	15 38	16 46	
01	194 45.8	31.7	233 28.2	8.8	8 15.2	10.5	59.6	35	18 29	18 55	19 26	13 28	14 34	15 41	16 47	
02	209 45.9	32.7	247 56.0	8.8	8 04.7	10.6	59.6	30	18 25	18 49	19 18	13 35	14 39	15 44	16 47	
03	224 46.1	33.6	262 23.8	8.8	7 54.1	10.7	59.6	20	18 17	18 39	19 06	13 48	14 49	15 49	16 48	
04	239 46.2	34.5	276 51.6	8.9	7 43.4	10.6	59.6	N 10	18 10	18 32	18 56	13 59	14 57	15 53	16 49	
05	254 46.4	35.4	291 19.5	8.9	7 32.8	10.8	59.6	0	18 04	18 25	18 49	14 09	15 04	15 57	16 50	
06	269 46.6 N	8 36.3	305 47.4	8.9	S 7 22.0	10.7	59.6	S 10	17 58	18 20	18 44	14 19	15 11	16 01	16 50	
07	284 46.7	37.2	320 15.3	9.0	7 11.3	10.9	59.6	20	17 52	18 14	18 40	14 30	15 19	16 06	16 51	
08	299 46.9	38.1	334 43.3	9.0	7 00.4	10.8	59.5	30	17 45	18 09	18 37	14 43	15 28	16 11	16 51	
09	314 47.1	39.1	349 11.3	9.0	6 49.6	10.9	59.5	35	17 41	18 07	18 36	14 50	15 33	16 13	16 52	
10	329 47.2	40.0	3 39.3	9.1	6 38.7	10.9	59.5	40	17 37	18 04	18 36	14 58	15 39	16 16	16 52	
11	344 47.4	40.9	18 07.4	9.1	6 27.8	11.0	59.5	45	17 32	18 01	18 35	15 07	15 45	16 20	16 53	
12	359 47.5 N	8 41.8	32 35.5	9.1	S 6 16.8	11.0	59.5	S 50	17 26	17 58	18 36	15 18	15 53	16 24	16 53	
13	14 47.7	42.7	47 03.6	9.2	6 05.8	11.0	59.5	52	17 23	17 57	18 36	15 23	15 57	16 26	16 54	
14	29 47.9	43.6	61 31.8	9.2	5 54.8	11.1	59.5	54	17 20	17 55	18 36	15 29	16 01	16 28	16 54	
15	44 48.0	44.5	76 00.0	9.2	5 43.7	11.1	59.5	56	17 16	17 54	18 37	15 35	16 05	16 30	16 54	
16	59 48.2	45.4	90 28.2	9.2	5 32.6	11.1	59.5	58	17 13	17 52	18 38	15 42	16 10	16 33	16 54	
17	74 48.4	46.4	104 56.4	9.3	5 21.5	11.2	59.5	S 60	17 08	17 51	18 39	15 50	16 15	16 36	16 55	
18	89 48.5 N	8 47.3	119 24.7	9.3	S 5											

		ARIES		VENUS -3.2		MARS +1.1		JUPITER -1.8		SATURN +0.8		STARS														
G.M.T.		G.H.A.		G.H.A.	Dec.	G.H.A.	Dec.	G.H.A.	Dec.	G.H.A.	Dec.	Name	S.H.A.	Dec.												
d	h	°	'	°	'	°	'	°	'	°	'		°	'												
13	00	200	56.4	185	30.0	N13	58.8	90	21.1	N24	17.8	254	08.0	S19	27.0	259	30.4	S20	18.9	Acamar	315	48.7	S	40	27.8	
	01	215	58.9	200	33.7		57.8	105	22.4		17.6	269	10.2		26.9	274	32.8		18.8	Acarnar	335	56.7	S	57	26.1	
	02	231	01.4	215	37.5		56.9	120	23.6		17.4	284	12.3		26.8	289	35.1		18.8	Acrux	173	52.7	S	62	53.2	
	03	246	03.8	230	41.3	..	55.9	135	24.8	..	17.2	299	14.5	..	26.8	304	37.5	..	18.8	Adhara	255	43.6	S	28	55.5	
	04	261	06.3	245	45.0		54.9	150	26.0		17.0	314	16.6		26.7	319	39.8		18.8	Aldebaran	291	34.9	N	16	25.8	
05	276	08.8	260	48.8		53.9	165	27.2		16.8	329	18.8		26.6	334	42.2		18.8								
THURSDAY	06	291	11.2	275	52.5	N13	53.0	180	28.5	N24	16.6	344	20.9	S19	26.6	349	44.5	S20	18.8	Alioth	166	54.8	N	56	10.3	
	07	306	13.7	290	56.3		52.0	195	29.7		16.4	359	23.1		26.5	4	46.9		18.7	Alkaid	153	29.5	N	49	30.4	
	08	321	16.1	306	00.0		51.0	210	30.9		16.2	14	25.2		26.4	19	49.3		18.7	Al Na'ir	28	33.5	S	47	08.8	
	09	336	18.6	321	03.8	..	50.0	225	32.1	..	16.0	29	27.4	..	26.4	34	51.6	..	18.7	Alnilam	276	26.6	S	1	13.8	
	10	351	21.1	336	07.5		49.1	240	33.3		15.8	44	29.5		26.3	49	54.0		18.7	Alphard	218	34.7	S	8	29.6	
	11	6	23.5	351	11.3		48.1	255	34.6		15.6	59	31.7		26.2	64	56.3		18.7							
	12	21	26.0	6	15.0	N13	47.1	270	35.8	N24	15.4	74	33.8	S19	26.2	79	58.7	S20	18.6	Alphecca	126	44.1	N	26	50.6	
	13	36	28.5	21	18.8		46.1	285	37.0		15.2	89	36.0		26.1	95	01.0		18.6	Alpheratz	358	24.7	N	28	52.4	
	14	51	30.9	36	22.5		45.1	300	38.2		15.0	104	38.1		26.0	110	03.4		18.6	Altair	62	46.7	N	8	45.8	
	15	66	33.4	51	26.3	..	44.2	315	39.4	..	14.8	119	40.3	..	26.0	125	05.7	..	18.6	Ankaa	353	55.0	S	42	31.0	
	16	81	35.9	66	30.0		43.2	330	40.7		14.6	134	42.4		25.9	140	08.1		18.6	Antares	113	14.4	S	26	20.7	
	17	96	38.3	81	33.7		42.2	345	41.9		14.4	149	44.6		25.9	155	10.4		18.5							
	18	111	40.8	96	37.5	N13	41.2	0	43.1	N24	14.2	164	46.7	S19	25.8	170	12.8	S20	18.5	Arcturus	146	31.4	N	19	23.0	
	19	126	43.2	111	41.2		40.2	15	44.3		14.0	179	48.9		25.7	185	15.1		18.5	Atria	108	51.3	S	68	57.2	
	20	141	45.7	126	44.9		39.2	30	45.5		13.8	194	51.0		25.7	200	17.5		18.5	Avior	234	34.0	S	59	23.5	
	21	156	48.2	141	48.7	..	38.2	45	46.7	..	13.6	209	53.2	..	25.6	215	19.9	..	18.5	Bellatrix	279	14.5	N	6	18.7	
	22	171	50.6	156	52.4		37.2	60	48.0		13.3	224	55.3		25.5	230	22.2		18.5	Betelgeuse	271	44.2	N	7	23.8	
	23	186	53.1	171	56.1		36.3	75	49.2		13.1	239	57.5		25.5	245	24.6		18.4							
14	00	201	55.6	186	59.9	N13	35.3	90	50.4	N24	12.9	254	59.6	S19	25.4	260	26.9	S20	18.4	Canopus	264	13.8	S	52	40.9	
	01	216	58.0	202	03.6		34.3	105	51.6		12.7	270	01.8		25.3	275	29.3		18.4	Capella	281	33.0	N	45	57.6	
	02	232	00.5	217	07.3		33.3	120	52.8		12.5	285	03.9		25.3	290	31.6		18.4	Deneb	49	58.4	N	45	08.2	
	03	247	03.0	232	11.0	..	32.3	135	54.0	..	12.3	300	06.1	..	25.2	305	34.0	..	18.4	Denebola	183	13.6	N	14	47.3	
	04	262	05.4	247	14.8		31.3	150	55.3		12.1	315	08.2		25.1	320	36.4		18.4	Diphda	349	35.8	S	18	12.1	
05	277	07.9	262	18.5		30.3	165	56.5		11.9	330	10.4		25.1	335	38.7		18.3								
FRIDAY	06	292	10.4	277	22.2	N13	29.3	180	57.7	N24	11.7	345	12.5	S19	25.0	350	41.1	S20	18.3	Dubhe	194	39.6	N	61	57.8	
	07	307	12.8	292	25.9		28.3	195	58.9		11.5	0	14.7		24.9	5	43.4		18.3	Elath	279	02.7	N	28	34.5	
	08	322	15.3	307	29.6		27.3	211	00.1		11.3	15	16.8		24.9	20	45.8		18.3	Eltanin	91	04.3	N	51	29.4	
	09	337	17.7	322	33.3	..	26.4	226	01.3	..	11.1	30	19.0	..	24.8	35	48.1	..	18.3	Enif	34	26.0	N	9	41.7	
	10	352	20.2	337	37.0		25.4	241	02.5		10.9	45	21.1		24.7	50	50.5		18.2	Fomalhaut	16	07.8	S	29	49.7	
	11	7	22.7	352	40.7		24.4	256	03.8		10.7	60	23.3		24.7	65	52.9		18.2							
	12	22	25.1	7	44.4	N13	23.4	271	05.0	N24	10.4	75	25.5	S19	24.6	80	55.2	S20	18.2	Gacrux	172	44.3	S	56	53.9	
	13	37	27.6	22	48.1		22.4	286	06.2		10.2	90	27.6		24.6	95	57.6		18.2	Gienah	176	32.6	S	17	19.7	
	14	52	30.1	37	51.8		21.4	301	07.4		10.0	105	29.8		24.5	110	59.9		18.2	Hadar	149	43.3	S	60	11.1	
	15	67	32.5	52	55.5	..	20.4	316	08.6	..	09.8	120	31.9	..	24.4	126	02.3	..	18.2	Hamal	328	45.6	N	23	16.6	
	16	82	35.0	67	59.2		19.4	331	09.8		09.6	135	34.1		24.4	141	04.6		18.1	Kaus Aust.	84	36.0	S	34	24.1	
	17	97	37.5	83	02.9		18.4	346	11.0		09.4	150	36.2		24.3	156	07.0		18.1							
	18	112	39.9	98	06.6	N13	17.4	1	12.2	N24	09.2	165	38.4	S19	24.2	171	09.4	S20	18.1	Kochab	137	17.3	N	74	18.8	
	19	127	42.4	113	10.3		16.4	16	13.5		09.0	180	40.5		24.2	186	11.7		18.1	Markab	14	17.9	N	14	59.6	
	20	142	44.8	128	14.0		15.4	31	14.7		08.8	195	42.7		24.1	201	14.1		18.1	Menkar	314	56.6	N	3	56.1	
	21	157	47.3	143	17.7	..	14.4	46	15.9	..	08.6	210	44.9	..	24.0	216	16.4	..	18.1	Menkent	148	53.7	S	36	10.8	
	22	172	49.8	158	21.3		13.4	61	17.1		08.3	225	47.0		24.0	231	18.8		18.0	Miaplacidus	221	47.6	S	69	33.8	
	23	187	52.2	173	25.0		12.4	76	18.3		08.1	240	49.2		23.9	246	21.2		18.0							
15	00	202	54.7	188	28.7	N13	11.4	91	19.5	N24	07.9	255	51.3	S19	23.8	261	23.5	S20	18.0	Mirfak	309	37.3	N	49	43.4	
	01	217	57.2	203	32.4		10.4	106	20.7		07.7	270	53.5		23.8	276	25.9		18.0	Nunki	76	47.1	S	26	20.6	
	02	232	59.6	218	36.1		09.4	121	21.9		07.5	285	55.7		23.7	291	28.2		18.0	Peacock	54	21.5	S	56	51.4	
	03	248	02.1	233	39.7	..	08.4	136	23.1	..	07.3	300	57.8	..	23.7	306	30.6	..	17.9	Pollux	244	16.0	N	28	07.2	
	04	263	04.6	248	43.4		07.4	151	24.3		07.1	316	00.0		23.6	321	33.0		17.9	Procyon	245	41.0	N	5	19.3	
05	278	07.0	263	47.1		06.4	166	25.6		06.9	331	02.1		23.5	336	35.3		17.9								
SATURDAY	06	293	09.5	278	50.7	N13	05.4	181	26.8	N24	06.7	346	04.3	S19	23.5	351	37.7	S20	17.9	Rasalhague	96	42.9	N	12	35.2	
	07	308	12.0	293	54.4		04.4	196	28.0		06.4	1	06.4		23.4	6	40.0		17.9	Regulus	208	25.3	N	12	09.4	
	08	323	14.4	308	58.1		03.4	211	29.2		06.2	16	08.6		23.3	21	42.4		17.9	Rigel	281	50.2	S	8	15.0	
	09	338	16.9	324	01.7	..	02.4	226	30.4	..	06.0	31	10.8	..	23.3	36	44.8	..	17.8	Rigel Kent.	140	45.0	S	60	40.4	
	10	353	19.3	339	05.4		01.4	241	31.6		05.8	46	12.9		23.2	51	47.1		17.8	Sabik	102	57.6	S	15	40.6	

G.M.T.		SUN		MOON				Lat.	Twilight		Sun-rise	Moonrise										
		G.H.A.	Dec.	G.H.A.	<i>v</i>	Dec.	<i>d</i>		H.P.	Naut.		Civil	13	14	15	16						
d	h	°	'	°	'	°	'	°	'	h	m	h	m	h	m	h	m	h	m			
THURSDAY	13 00	179	49.5	N 8	52.7	206	15.0	9.4	S	4	02.8	11.4	59.4	N 72	///	02 09	03 46	05 06	04 59	04 52	04 45	
	01	194	49.6		53.6	220	43.4	9.5		3	51.4	11.3	59.4	N 70	///	02 43	04 02	05 01	05 01	05 00	05 00	
	02	209	49.8		54.5	235	11.9	9.5		3	40.1	11.4	59.4	68	01 00	03 06	04 15	04 58	05 02	05 07	05 12	
	03	224	50.0	..	55.5	249	40.4	9.6		3	28.7	11.4	59.4	64	02 22	03 39	04 33	04 52	05 04	05 17	05 31	
	04	239	50.1		56.4	264	09.0	9.6		3	17.3	11.4	59.4	62	02 44	03 51	04 41	04 50	05 05	05 21	05 38	
	05	254	50.3		57.3	278	37.6	9.5		3	05.9	11.4	59.3	60	03 01	04 01	04 47	04 48	05 06	05 24	05 44	
	06	269	50.4	N 8	58.2	293	06.1	9.7	S	2	54.5	11.4	59.3	N 58	03 15	04 10	04 53	04 46	05 07	05 28	05 50	
	07	284	50.6		59.1	307	34.8	9.6		2	43.1	11.4	59.3	56	03 27	04 18	04 58	04 45	05 08	05 31	05 55	
	08	299	50.8		00.0	322	03.4	9.7		2	31.7	11.5	59.3	54	03 38	04 25	05 02	04 43	05 08	05 33	06 00	
	09	314	50.9	..	00.9	336	32.1	9.7		2	20.2	11.5	59.3	52	03 46	04 30	05 06	04 42	05 09	05 36	06 04	
	10	329	51.1		01.8	351	00.8	9.7		2	08.7	11.4	59.3	50	03 54	04 36	05 10	04 41	05 09	05 38	06 07	
	11	344	51.2		02.7	5	29.5	9.7		1	57.3	11.5	59.3	45	04 10	04 47	05 18	04 38	05 10	05 42	06 16	
	12	359	51.4	N 9	03.6	19	58.2	9.8	S	1	45.8	11.5	59.3	N 40	04 23	04 56	05 24	04 36	05 11	05 46	06 22	
	13	14	51.6		04.5	34	27.0	9.7		1	34.3	11.5	59.2	35	04 33	05 04	05 30	04 34	05 12	05 50	06 28	
	14	29	51.7		05.4	48	55.7	9.8		1	22.8	11.4	59.2	30	04 41	05 10	05 35	04 33	05 13	05 53	06 33	
	15	44	51.9	..	06.3	63	24.5	9.9		1	11.4	11.5	59.2	20	04 54	05 21	05 43	04 30	05 14	05 58	06 43	
	16	59	52.0		07.2	77	53.4	9.8		0	59.9	11.5	59.2	N 10	05 04	05 29	05 50	04 27	05 15	06 03	06 51	
	17	74	52.2		08.2	92	22.2	9.9		0	48.4	11.5	59.2	0	05 12	05 36	05 57	04 25	05 16	06 07	06 58	
	18	89	52.3	N 9	09.1	106	51.1	9.8	S	0	36.9	11.5	59.2	S 10	05 18	05 42	06 04	04 22	05 18	06 12	07 06	
	19	104	52.5		10.0	121	19.9	9.9		0	25.4	11.5	59.1	20	05 23	05 48	06 10	04 20	05 19	06 17	07 14	
	20	119	52.7		10.9	135	48.8	10.0		0	13.9	11.5	59.1	30	05 26	05 54	06 18	04 17	05 20	06 23	07 24	
	21	134	52.8	..	11.8	150	17.8	9.9	S	0	02.4	11.4	59.1	35	05 28	05 57	06 23	04 15	05 21	06 26	07 29	
	22	149	53.0		12.7	164	46.7	9.9	N	0	09.0	11.5	59.1	40	05 29	06 00	06 28	04 14	05 22	06 29	07 35	
	23	164	53.1		13.6	179	15.6	10.0		0	20.5	11.5	59.1	45	05 30	06 04	06 33	04 12	05 23	06 33	07 42	
FRIDAY	14 00	179	53.3	N 9	14.5	193	44.6	10.0	N	0	32.0	11.4	59.1	S 50	05 30	06 08	06 40	04 09	05 24	06 39	07 51	
	01	194	53.5		15.4	208	13.6	10.0		0	43.4	11.4	59.0	52	05 30	06 09	06 43	04 08	05 25	06 41	07 55	
	02	209	53.6		16.3	222	42.6	10.0		0	54.8	11.5	59.0	54	05 30	06 11	06 47	04 07	05 26	06 44	07 59	
	03	224	53.8	..	17.2	237	11.6	10.0		1	06.3	11.4	59.0	56	05 30	06 13	06 51	04 05	05 26	06 47	08 04	
	04	239	53.9		18.1	251	40.6	10.1		1	17.7	11.4	59.0	58	05 29	06 15	06 55	04 04	05 27	06 50	08 10	
	05	254	54.1		19.0	266	09.7	10.1		1	29.1	11.4	59.0	S 60	05 29	06 17	07 00	04 02	05 28	06 53	08 16	
	06	269	54.2	N 9	19.9	280	38.8	10.0	N	1	40.5	11.3	58.9									
	07	284	54.4		20.8	295	07.8	10.1		1	51.8	11.4	58.9	Lat.	Sun-set	Twilight		Moonset				
	08	299	54.5		21.7	309	36.9	10.1		2	03.2	11.3	58.9			Civil	Naut.	13	14	15	16	
	09	314	54.7	..	22.6	324	06.0	10.2		2	14.5	11.3	58.9									
	10	329	54.9		23.5	338	35.2	10.1		2	25.8	11.3	58.9	N 72	20 18	21 59	///	16 37	18 31	20 25	22 19	
	11	344	55.0		24.4	353	04.3	10.1		2	37.1	11.3	58.8	N 70	20 02	21 23	///	16 38	18 25	20 11	21 56	
	12	359	55.2	N 9	25.3	7	33.4	10.2	N	2	48.4	11.2	58.8	68	19 49	20 58	23 16	16 39	18 21	20 01	21 38	
	13	14	55.3		26.2	22	02.6	10.2		2	59.6	11.3	58.8	66	19 38	20 39	22 16	16 40	18 17	19 52	21 24	
	14	29	55.5		27.1	36	31.8	10.2		3	10.9	11.2	58.8	64	19 29	20 24	21 43	16 41	18 14	19 45	21 12	
	15	44	55.6	..	28.0	51	01.0	10.1		3	22.1	11.1	58.8	62	19 22	20 12	21 20	16 42	18 11	19 38	21 02	
	16	59	55.8		28.9	65	30.1	10.3		3	33.2	11.2	58.7	60	19 15	20 01	21 02	16 43	18 09	19 33	20 54	
	17	74	55.9		29.8	79	59.4	10.2		3	44.4	11.1	58.7	N 58	19 09	19 52	20 48	16 43	18 06	19 28	20 46	
	18	89	56.1	N 9	30.7	94	28.6	10.2	N	3	55.5	11.1	58.7	56	19 04	19 44	20 35	16 44	18 05	19 24	20 40	
	19	104	56.3		31.6	108	57.8	10.2		4	06.6	11.0	58.7	54	19 00	19 38	20 25	16 44	18 03	19 20	20 34	
	20	119	56.4		32.5	123	27.0	10.3		4	17.6	11.1	58.6	52	18 56	19 31	20 16	16 45	18 01	19 16	20 29	
	21	134	56.6	..	33.4	137	56.3	10.2		4	28.7	10.9	58.6	50	18 52	19 26	20 08	16 45	18 00	19 13	20 24	
	22	149	56.7		34.3	152	25.5	10.3		4	39.6	11.0	58.6	45	18 44	19 14	19 51	16 46	17 57	19 06	20 14	
	23	164	56.9		35.2	166	54.8	10.3		4	50.6	10.9	58.6	N 40	18 37	19 05	19 39	16 46	17 54	19 01	20 06	
SATURDAY	15 00	179	57.0	N 9	36.1	181	24.1	10.2	N	5	01.5	10.9	58.6	35	18 32	18 57	19 28	16 47	17 52	18 56	19 58	
	01	194	57.2		37.0	195	53.3	10.3		5	12.4	10.8	58.5	30	18 26	18 51	19 20	16 47	17 50	18 52	19 52	
	02	209	57.3		37.9	210	22.6	10.3		5	23.2	10.8	58.5	20	18 18	18 40	19 07	16 48	17 47	18 44	19 41	
	03	224	57.5	..	38.8	224	51.9	10.3		5	34.0	10.8	58.5	N 10	18 10	18 32	18 57	16 49	17 44	18 38	19 32	
	04	239	57.6		39.7	239	21.2	10.3		5	44.8	10.7	58.5	0	18 04	18 25	18 49	16 50	17 41	18 32	19 22	
	05	254	57.8		40.6	253	50.5	10.3		5	55.5	10.7	58.4	S 10	17 57	18 18	18 43	16 50	17 38	18 26	19 13	
	06	269	57.9	N 9	41.5	268	19.8	10.4	N	6	06.2	10.7	58.4	20	17 50	18 12	18 38	16 51	17 35	18 19	19 04	
	07	284	58.1		42.4	282	49.2	10.3		6	16.9	10.6	58.4	30	17 42	18 06	18 34	16 51	17 32	18 12	18 53	
	08	299	58.3		43.2	297	18.5	10.3		6	27.5	10.5	58.4	35	17 37	18 03	18 32	16 52	17 30	18 08	18 47	
	09	314	58.4	..	44.1	311	47.8	10.4		6	38.0	10.5	58.3	40	17 32	18 00	18 31	16 52	17 27	18 03	18 40	
	10	329	58.6		45.0	326	17.2	10.3		6	48.5	10.5	58.3	45	17 26	17 56	18 30	16 53	17 25	17 57	18 31	
	11	344	58.7		45.9	340	46.5	10.4		6	59.0	10.4	58.3	S 50	17 19	17 52	18 30	16 53	17 22	17 51	18 21	
	12	359	58.9	N 9	46.8	355	15.9	10.3	N	7	09.4	10.4	58.3	52	17 16	17 50	18 30	16 54	17 20	17 48	18 17	
	13	14	59.0		47.7	9	45.2	10.4		7	19.8	10.3	58.2	54	17 13	17 49	18 30	16 54	17 19	17 44	18 12	
	14	29	59.2		48.6	24	14.6	10.3		7	30.1	10.3	58.2	56	17 09	17 47	18 30	16 54	17 17	17 41	18 06	
	15	44	59.3	..	49.5	38	43.9	10.4		7	40.4	10.2	58.2	58	17 05	17 45	18 30	16 54	17 15	17 36	18 00	
	16	59	59.5		50.4	53	13.3	10.4		7	50.6	10.1	58.2	S 60	17 00	17 42	18 30	16 55	17 13	17 32	17 53	
	17	74	59.6		51.3	67	42.7	10.4		8	00.7	10.1	58.1									
	18	89	59.8	N 9	52.2	82	12.1	10.3	N	8	10.8	10.1	58.1	Day	SUN		MOON					
	19	104	59.9		53.1	96	41.4	10.4		8	20.9	10.0	58.1		Eqn. of Time	Mer. Pass.	Mer. Upper	Pass. Lower	Age	Phase		

		ARIES		VENUS -3.4		MARS +1.1		JUPITER -1.8		SATURN +0.8		STARS								
G.M.T.		G.H.A.	G.H.A.	Dec.	G.H.A.	Dec.	G.H.A.	Dec.	G.H.A.	Dec.	G.H.A.	Dec.	Name	S.H.A.	Dec.					
d	h			°		°		°		°		°		°	°					
SUNDAY	16 00	203 53.8	189 56.3	N12 47.3	91 48.5	N24 02.8	256 43.2	S19 22.3	262 20.2	S20 17.6	Acamar	315 48.7	S 40 27.8							
	01	218 56.3	204 59.9	46.3	106 49.7	02.6	271 45.4	22.3	277 22.6	17.6	Achernar	335 56.7	S 57 26.1							
	02	233 58.8	220 03.6	45.3	121 50.9	02.4	286 47.5	22.2	292 24.9	17.6	Acrux	173 52.7	S 62 53.2							
	03	249 01.2	235 07.2	.. 44.3	136 52.1	.. 02.2	301 49.7	.. 22.1	307 27.3	.. 17.5	Adhara	255 43.6	S 28 55.5							
	04	264 03.7	250 10.8	43.3	151 53.3	01.9	316 51.9	22.1	322 29.7	17.5	Aldebaran	291 34.9	N 16 25.8							
	05	279 06.2	265 14.4	42.3	166 54.5	01.7	331 54.0	22.0	337 32.0	17.5										
	06	294 08.6	280 18.0	N12 41.3	181 55.7	N24 01.5	346 56.2	S19 21.9	352 34.4	S20 17.5	Alioth	166 54.8	N 56 10.3							
	07	309 11.1	295 21.6	40.3	196 56.9	01.3	1 58.4	21.9	7 36.8	17.5	Alkaid	153 29.5	N 49 30.4							
	08	324 13.6	310 25.2	39.3	211 58.1	01.1	17 00.5	21.8	22 39.1	17.5	Al Na'ir	28 33.5	S 47 08.1							
	09	339 16.0	325 28.8	.. 38.3	226 59.3	.. 00.9	32 02.7	.. 21.8	37 41.5	.. 17.4	Alnilam	276 26.6	S 1 13.8							
	10	354 18.5	340 32.4	37.3	242 00.5	00.6	47 04.9	21.7	52 43.9	17.4	Alphard	218 34.7	S 8 29.6							
	11	9 20.9	355 36.0	36.3	257 01.7	00.4	62 07.0	21.6	67 46.2	17.4										
	12	24 23.4	10 39.6	N12 35.3	272 02.9	N24 00.2	77 09.2	S19 21.6	82 48.6	S20 17.4	Alphecca	126 44.1	N 26 50.6							
	13	39 25.9	25 43.2	34.3	287 04.1	24 00.0	92 11.4	21.5	97 51.0	17.4	Alpheratz	358 24.7	N 28 52.4							
	14	54 28.3	40 46.8	33.2	302 05.3	23 59.8	107 13.5	21.4	112 53.3	17.4	Altair	62 46.7	N 8 45.8							
	15	69 30.8	55 50.4	.. 32.2	317 06.5	.. 59.5	122 15.7	.. 21.4	127 55.7	.. 17.3	Ankaa	353 55.0	S 42 31.0							
	16	84 33.3	70 53.9	31.2	332 07.7	59.3	137 17.9	21.3	142 58.1	17.3	Antares	113 14.4	S 26 20.7							
	17	99 35.7	85 57.5	30.2	347 08.9	59.1	152 20.0	21.3	158 00.4	17.3										
	18	114 38.2	101 01.1	N12 29.2	2 10.1	N23 58.9	167 22.2	S19 21.2	173 02.8	S20 17.3	Arcturus	146 31.4	N 19 23.0							
	19	129 40.7	116 04.7	28.2	17 11.3	58.7	182 24.4	21.1	188 05.2	17.3	Atria	108 51.3	S 68 57.3							
	20	144 43.1	131 08.3	27.2	32 12.5	58.4	197 26.6	21.1	203 07.5	17.3	Avior	234 34.0	S 59 23.5							
	21	159 45.6	146 11.8	.. 26.2	47 13.7	.. 58.2	212 28.7	.. 21.0	218 09.9	.. 17.3	Bellatrix	279 14.5	N 6 18.7							
	22	174 48.1	161 15.4	25.2	62 14.9	58.0	227 30.9	20.9	233 12.3	17.2	Betelgeuse	271 44.2	N 7 23.8							
23	189 50.5	176 19.0	24.2	77 16.1	57.8	242 33.1	20.9	248 14.6	17.2											
MONDAY	17 00	204 53.0	191 22.5	N12 23.2	92 17.3	N23 57.6	257 35.2	S19 20.8	263 17.0	S20 17.2	Canopus	264 13.9	S 52 40.9							
	01	219 55.4	206 26.1	22.2	107 18.5	57.3	272 37.4	20.8	278 19.4	17.2	Capella	281 33.1	N 45 57.6							
	02	234 57.9	221 29.6	21.2	122 19.7	57.1	287 39.6	20.7	293 21.7	17.2	Deneb	49 58.4	N 45 08.2							
	03	250 00.4	236 33.2	.. 20.2	137 20.9	.. 56.9	302 41.8	.. 20.6	308 24.1	.. 17.2	Denebola	183 13.6	N 14 47.3							
	04	265 02.8	251 36.7	19.2	152 22.0	56.7	317 43.9	20.6	323 26.5	17.1	Diphda	349 35.8	S 18 12.1							
	05	280 05.3	266 40.3	18.2	167 23.2	56.5	332 46.1	20.5	338 28.9	17.1										
	06	295 07.8	281 43.8	N12 17.2	182 24.4	N23 56.2	347 48.3	S19 20.5	353 31.2	S20 17.1	Dubhe	194 39.6	N 61 57.8							
	07	310 10.2	296 47.4	16.2	197 25.6	56.0	2 50.5	20.4	8 33.6	17.1	Elmath	279 02.7	N 28 34.5							
	08	325 12.7	311 50.9	15.1	212 26.8	55.8	17 52.6	20.3	23 36.0	17.1	Eltanin	91 04.2	N 51 29.4							
	09	340 15.2	326 54.5	.. 14.1	227 28.0	.. 55.6	32 54.8	.. 20.3	38 38.3	.. 17.1	Enif	34 26.0	N 9 41.7							
	10	355 17.6	341 58.0	13.1	242 29.2	55.4	47 57.0	20.2	53 40.7	17.0	Fomalhaut	16 07.7	S 29 49.7							
	11	10 20.1	357 01.5	12.1	257 30.4	55.1	62 59.1	20.1	68 43.1	17.0										
	12	25 22.5	12 05.0	N12 11.1	272 31.6	N23 54.9	78 01.3	S19 20.1	83 45.4	S20 17.0	Gacrux	172 44.3	S 56 53.9							
	13	40 25.0	27 08.6	10.1	287 32.8	54.7	93 03.5	20.0	98 47.8	17.0	Gienah	176 32.6	S 17 17.7							
	14	55 27.5	42 12.1	09.1	302 34.0	54.5	108 05.7	20.0	113 50.2	17.0	Hadar	149 43.2	S 60 11.2							
	15	70 29.9	57 15.6	.. 08.1	317 35.2	.. 54.2	123 07.8	.. 19.9	128 52.6	.. 17.0	Hamal	328 45.6	N 23 16.6							
	16	85 32.4	72 19.1	07.1	332 36.4	54.0	138 10.0	19.8	143 54.9	17.0	Kaus Aust.	84 36.0	S 34 24.1							
	17	100 34.9	87 22.6	06.1	347 37.6	53.8	153 12.2	19.8	158 57.3	16.9										
	18	115 37.3	102 26.2	N12 05.1	2 38.8	N23 53.6	168 14.4	S19 19.7	173 59.7	S20 16.9	Kochab	137 17.3	N 74 18.8							
	19	130 39.8	117 29.7	04.1	17 40.0	53.4	183 16.6	19.7	189 02.0	16.9	Markab	14 17.9	N 14 59.6							
	20	145 42.3	132 33.2	03.1	32 41.1	53.1	198 18.7	19.6	204 04.4	16.9	Menkar	314 56.6	N 3 56.1							
	21	160 44.7	147 36.7	.. 02.1	47 42.3	.. 52.9	213 20.9	.. 19.5	219 06.8	.. 16.9	Menkent	148 53.7	S 36 10.8							
	22	175 47.2	162 40.2	00.1	62 43.5	52.7	228 23.1	19.5	234 09.1	16.9	Miaplacidus	221 47.7	S 69 33.8							
23	190 49.7	177 43.7	12 00.1	77 44.7	52.5	243 25.3	19.4	249 11.5	16.8											
TUESDAY	18 00	205 52.1	192 47.2	N11 59.1	92 45.9	N23 52.2	258 27.4	S19 19.4	264 13.9	S20 16.8	Mirfak	309 37.3	N 49 43.4							
	01	220 54.6	207 50.7	58.1	107 47.1	52.0	273 29.6	19.3	279 16.3	16.8	Nunki	76 47.1	S 26 20.6							
	02	235 57.0	222 54.2	57.1	122 48.3	51.8	288 31.8	19.2	294 18.6	16.8	Pecock	54 21.4	S 56 51.4							
	03	250 59.5	237 57.6	.. 56.1	137 49.5	.. 51.6	303 34.0	.. 19.2	309 21.0	.. 16.8	Pollux	244 16.0	N 28 07.2							
	04	266 02.0	253 01.1	55.1	152 50.7	51.3	318 36.2	19.1	324 23.4	16.8	Procyon	245 41.0	N 5 19.3							
	05	281 04.4	268 04.6	54.1	167 51.9	51.1	333 38.3	19.1	339 25.8	16.8										
	06	296 06.9	283 08.1	N11 53.1	182 53.1	N23 50.9	348 40.5	S19 19.0	354 28.1	S20 16.7	Rasalhague	96 42.9	N 12 35.2							
	07	311 09.4	298 11.5	52.1	197 54.2	50.7	3 42.7	18.9	9 30.5	16.7	Regulus	208 25.3	N 12 09.4							
	08	326 11.8	313 15.0	51.1	212 55.4	50.4	18 44.9	18.9	24 32.9	16.7	Rigel	281 50.2	S 8 15.0							
	09	341 14.3	328 18.5	.. 50.1	227 56.6	.. 50.2	33 47.1	.. 18.8	39 35.2	.. 16.7	Rigel Kent.	140 45.5	S 60 40.4							
	10	356 16.8	343 21.9	49.1	242 57.8	50.0	48 49.2	18.8	54 37.6	16.7	Sabik	102 57.6	S 15 40.6							
	11	11 19.2	358 25.4	48.2	257 59.0	49.7	63 51.4	18.7	69 40.0	16.7										
	12	26 21.7	13 28.9	N11 47.2	273 00.2	N23 49.5	78 53.6	S19 18.6	84 42.4	S20 16.7	Schedar	350 26.0	N 56 19.3							
	13	41 24.1	28 32.3	46.2	288 01.4	49.3	93 55.8	18.6	99 44.7	16.6	Shaula	97 15.3	S 37 04.4							
	14	56 26.6	43 35.8	45.2	303 02.6	49.1	108 58.0	18.5	114 47.1	16.6	Sirius	259 08.6	S 16 40.0							
	15	71 29.1	58 39.2	.. 44.2	318 03.7	.. 48.8	124 00.1	.. 18.5	129 49.5	.. 16.6	Spica	159 12.5	S 10 57.6							
	16	86 31.5	73 42.7	43.2	333 04.9	48.6	139 02.3	18.4	144 51.9	16.6	Suhail	223 21.3	S 43 16.9							
	17	101 34.0	88 46.1	42.2	348 06.1	48.4	154 04.5	18.4	159 54.2	16.6										
	18	116 36.5	103 49.5	N11 41.2	3 07.3	N23 48.2	169 06.7	S19 18.3	174 56.6	S20 16.6	Vega	81 05.5	N 38 44.6							
	19	131 38.9	118 53.0	40.2	18 08.5	47.9	184 08.9	18.2	189 59.0	16.6	Zuben'ubi	137 48.8	S 15 52.9							
	20	146 41.4	133 56.4	39.2	33 09.7	47.7	199 11.1	18.2	205 01.4	16.5										
	21	161 43.9	148 59.8	.. 38.2	48 10.9	.. 47.5	214 13.2	.. 18.1	220 03.7	.. 16.5		S.H.A.	Mer. Pass.							
	22	176 46.3	164 03.3	37.2	63 12.1	47.2	229 15.4	18.1	235 06.1	16.5	Venus	346 29.5	11 12							
23	191 48.8	179 06.7	36.2	78 13.2	47.0	244 17.6	18.0	250 08.5	16.5	Mars	247 24.3	17 49								
Mer. Pass. 10 18-8		v	3.5	d	1.0	v	1.2	d	0.2	v	2.2	d	0.1	v	2.4	d	0.0	Jupiter	52 42.2	6 49
																		Saturn	58 24.0	6 26

G.M.T.	SUN		MOON					Lat.	Twilight		Sun-rise	Moonrise			
									Naut.	Civil		16	17	18	19
	G.H.A.	Dec.	G.H.A.	<i>v</i>	Dec.	<i>d</i>	H.P.								
SUNDAY	d h							°	h m	h m	h m	h m	h m	h m	h m
	16 00	180 00.7 N 9 57.5	169 08.4 10.4	N 9 10.3	9.8	57.9		N 72	///	01 40	03 29	04 45	04 36	04 24	03 58
	01	195 00.8 58.4	183 37.8 10.4	9 20.1	9.6	57.9		N 70	///	02 22	03 47	05 00	05 01	05 04	05 12
	02	210 01.0 9 59.3	198 07.2 10.4	9 29.7	9.6	57.9		68	///	02 50	04 02	05 12	05 19	05 31	05 50
	03	225 01.1 10 00.2	212 36.6 10.4	9 39.3	9.5	57.8		66	01 26	03 11	04 13	05 22	05 35	05 52	06 17
	04	240 01.3 01.1	227 06.0 10.4	9 48.8	9.5	57.8		64	02 04	03 27	04 23	05 31	05 47	06 09	06 37
	05	255 01.4 02.0	241 35.4 10.4	9 58.3	9.4	57.8		62	02 29	03 40	04 31	05 38	05 58	06 23	06 54
	06	270 01.6 N10 02.9	256 04.8 10.4	N10 07.7	9.3	57.8		60	02 49	03 52	04 38	05 44	06 07	06 34	07 08
	07	285 01.7 03.7	270 34.2 10.4	10 17.0	9.3	57.7		N 58	03 05	04 01	04 45	05 50	06 15	06 45	07 20
	08	300 01.9 04.6	285 03.6 10.4	10 26.3	9.2	57.7		56	03 18	04 10	04 50	05 55	06 22	06 54	07 30
	09	315 02.0 .. 05.5	299 33.0 10.4	10 35.5	9.2	57.7		54	03 29	04 17	04 55	06 00	06 29	07 02	07 39
	10	330 02.2 06.4	314 02.4 10.4	10 44.7	9.0	57.6		52	03 39	04 23	05 00	06 04	06 34	07 09	07 48
	11	345 02.3 07.3	328 31.8 10.5	10 53.7	9.0	57.6		50	03 47	04 29	05 04	06 07	06 40	07 15	07 55
	12	0 02.5 N10 08.2	343 01.3 10.4	N11 02.7	9.0	57.6		45	04 04	04 42	05 12	06 16	06 51	07 29	08 11
	13	15 02.6 09.1	357 30.7 10.4	11 11.7	8.8	57.6		N 40	04 18	04 52	05 20	06 22	07 00	07 40	08 24
	14	30 02.8 10.0	12 00.1 10.4	11 20.5	8.8	57.5		35	04 29	05 00	05 26	06 28	07 08	07 50	08 35
	15	45 02.9 .. 10.8	26 29.5 10.4	11 29.3	8.8	57.5		30	04 38	05 07	05 31	06 33	07 15	07 59	08 44
	16	60 03.1 11.7	40 58.9 10.5	11 38.1	8.6	57.5		20	04 52	05 18	05 41	06 43	07 28	08 14	09 01
	17	75 03.2 12.6	55 28.4 10.4	11 46.7	8.6	57.4		N 10	05 02	05 27	05 49	06 51	07 38	08 27	09 16
	18	90 03.3 N10 13.5	69 57.8 10.4	N11 55.3	8.5	57.4		0	05 11	05 35	05 56	06 58	07 49	08 39	09 30
	19	105 03.5 14.4	84 27.2 10.4	12 03.8	8.5	57.4		S 10	05 18	05 42	06 04	07 06	07 59	08 52	09 43
	20	120 03.6 15.3	98 56.6 10.5	12 12.3	8.3	57.4		20	05 23	05 49	06 11	07 14	08 10	09 05	09 58
	21	135 03.8 .. 16.1	113 26.1 10.4	12 20.6	8.3	57.3		30	05 28	05 56	06 20	07 24	08 23	09 20	10 15
	22	150 03.9 17.0	127 55.5 10.4	12 28.9	8.2	57.3		35	05 30	05 59	06 25	07 29	08 30	09 29	10 25
	23	165 04.1 17.9	142 24.9 10.5	12 37.1	8.1	57.3		40	05 32	06 03	06 31	07 35	08 38	09 39	10 36
MONDAY	17 00	180 04.2 N10 18.8	156 54.4 10.4	N12 45.2	8.1	57.2		S 50	05 34	06 12	06 45	07 51	09 00	10 05	11 05
	01	195 04.4 19.7	171 23.8 10.4	12 53.3	8.0	57.2		52	05 35	06 14	06 48	07 55	09 06	10 12	11 13
	02	210 04.5 20.6	185 53.2 10.5	13 01.3	7.9	57.2		54	05 35	06 16	06 52	07 59	09 12	10 20	11 21
	03	225 04.7 .. 21.4	200 22.7 10.4	13 09.2	7.8	57.1		56	05 35	06 19	06 57	08 04	09 19	10 28	11 31
	04	240 04.8 22.3	214 52.1 10.4	13 17.0	7.7	57.1		58	05 36	06 21	07 02	08 10	09 26	10 38	11 42
	05	255 05.0 23.2	229 21.5 10.5	13 24.7	7.7	57.1		S 60	05 36	06 24	07 07	08 16	09 35	10 49	11 54
	06	270 05.1 N10 24.1	243 51.0 10.4	N13 32.4	7.6	57.1									
	07	285 05.2 25.0	258 20.4 10.4	13 40.0	7.5	57.0		Lat.	Sun-set	Twilight		Moonset			
	08	300 05.4 25.9	272 49.8 10.5	13 47.5	7.4	57.0				Civil	Naut.	16	17	18	19
	09	315 05.5 .. 26.7	287 19.3 10.4	13 54.9	7.4	57.0		°	h m	h m	h m	h m	h m	h m	h m
	10	330 05.7 27.6	301 48.7 10.5	14 02.3	7.2	56.9		N 72	20 34	22 29	///	22 19	24 16	00 16	02 28
	11	345 05.8 28.5	316 18.2 10.4	14 09.5	7.2	56.9		N 70	20 15	21 43	///	21 56	23 38	25 14	01 14
	12	0 06.0 N10 29.4	330 47.6 10.5	N14 16.7	7.1	56.9		68	20 00	21 13	///	21 38	23 11	24 37	00 37
	13	15 06.1 30.2	345 17.1 10.4	14 23.8	7.0	56.8		66	19 48	20 52	22 42	21 24	22 51	24 11	00 11
	14	30 06.3 31.1	359 46.5 10.5	14 30.8	6.9	56.8		64	19 38	20 35	22 00	21 12	22 35	23 50	24 55
	15	45 06.4 .. 32.0	14 16.0 10.5	14 37.7	6.8	56.8		62	19 30	20 21	21 33	21 02	22 22	23 34	24 37
	16	60 06.5 32.9	28 45.5 10.4	14 44.5	6.8	56.8		60	19 22	20 10	21 13	20 54	22 10	23 20	24 21
	17	75 06.7 33.8	43 14.9 10.5	14 51.3	6.7	56.7		N 58	19 16	20 00	20 57	20 46	22 01	23 09	24 09
	18	90 06.8 N10 34.6	57 44.4 10.5	N14 58.0	6.5	56.7		56	19 10	19 51	20 44	20 40	21 52	22 59	23 58
	19	105 07.0 35.5	72 13.9 10.4	15 04.5	6.5	56.7		54	19 05	19 44	20 32	20 34	21 45	22 50	23 48
	20	120 07.1 36.4	86 43.3 10.5	15 11.0	6.4	56.6		52	19 01	19 37	20 22	20 29	21 38	22 42	23 39
	21	135 07.3 .. 37.3	101 12.8 10.5	15 17.4	6.4	56.6		50	18 57	19 31	20 14	20 24	21 32	22 35	23 32
	22	150 07.4 38.1	115 42.3 10.5	15 23.8	6.2	56.6		45	18 48	19 19	19 56	20 14	21 19	22 19	23 15
	23	165 07.6 39.0	130 11.8 10.4	15 30.0	6.1	56.5		N 40	18 40	19 09	19 42	20 06	21 08	22 07	23 02
TUESDAY	01	195 07.8 40.8	159 10.7 10.5	15 42.2	6.0	56.5		35	18 34	19 00	19 31	19 58	20 59	21 56	22 50
	02	210 08.0 41.7	173 40.2 10.5	15 48.2	5.8	56.5		30	18 28	18 53	19 22	19 52	20 51	21 47	22 40
	03	225 08.1 .. 42.5	188 09.7 10.5	15 54.0	5.8	56.4		20	18 19	18 41	19 08	19 41	20 37	21 31	22 23
	04	240 08.3 43.4	202 39.2 10.6	15 59.8	5.7	56.4		N 10	18 11	18 32	18 57	19 32	20 25	21 17	22 08
	05	255 08.4 44.3	217 08.8 10.5	16 05.5	5.6	56.4		0	18 03	18 24	18 48	19 22	20 13	21 04	21 54
	06	270 08.5 N10 45.2	231 38.3 10.5	N16 11.1	5.5	56.3		S 10	17 55	18 17	18 41	19 13	20 02	20 50	21 39
	07	285 08.7 46.0	246 07.8 10.5	16 16.6	5.5	56.3		20	17 48	18 10	18 36	19 04	19 49	20 36	21 24
	08	300 08.8 46.9	260 37.3 10.6	16 22.1	5.3	56.3		30	17 39	18 03	18 31	18 53	19 35	20 20	21 07
	09	315 09.0 .. 47.8	275 06.9 10.5	16 27.4	5.2	56.3		35	17 34	17 59	18 29	18 47	19 28	20 11	20 57
	10	330 09.1 48.6	289 36.4 10.6	16 32.6	5.2	56.2		40	17 28	17 55	18 27	18 40	19 19	20 00	20 45
	11	345 09.2 49.5	304 06.0 10.5	16 37.8	5.1	56.2		45	17 21	17 51	18 25	18 31	19 08	19 48	20 32
	12	0 09.4 N10 50.4	318 35.5 10.6	N16 42.9	4.9	56.2		S 50	17 13	17 46	18 24	18 21	18 55	19 33	20 15
	13	15 09.5 51.3	333 05.1 10.5	16 47.8	4.9	56.1		52	17 10	17 44	18 23	18 17	18 49	19 26	20 08
	14	30 09.7 52.1	347 34.6 10.6	16 52.7	4.8	56.1		54	17 06	17 42	18 23	18 12	18 43	19 18	19 59
	15	45 09.8 .. 53.0	2 04.2 10.6	16 57.5	4.7	56.1		56	17 02	17 40	18 23	18 06	18 35	19 09	19 49
	16	60 09.9 53.9	16 33.8 10.6	17 02.2	4.6	56.1		58	16 57	17 37	18 22	18 00	18 27	19 00	19 38
	17	75 10.1 54.7	31 03.4 10.6	17 06.8	4.5	56.0		S 60	16 51	17 34	18 22	17 53	18 18	18 48	19 25
	18	90 10.2 N10 55.6	45 33.0 10.6	N17 11.3	4.4	56.0									
	19	105 10.4 56.5	60 02.6 10.6	17 15.7	4.3	56.0		Day	SUN		Mer.		MOON		
	20	120 10.5 57.4	74 32.2 10.7	17 20.0	4.2	55.9			Eqn. of Time	12h	Pass.	Upper	Pass. Lower	Age	Phase
	21	135 10.6 .. 58.2	89 01.9 10.6	17 24.2	4.2	55.9			00h						
	22	150 10.8 10 59.1	103 31.5 10.7	17 28.4	4.0	55.9			m s	m s	h m	h m	h m	d	
	23	165 10.													

	ARIES	VENUS -3.6		MARS +1.2		JUPITER -1.8		SATURN +0.8		STARS			
G.M.T.	G.H.A.	G.H.A.	Dec.	G.H.A.	Dec.	G.H.A.	Dec.	G.H.A.	Dec.	Name	S.H.A.	Dec.	
d h	° ' "	° ' "	° ' "	° ' "	° ' "	° ' "	° ' "	° ' "	° ' "		° ' "	° ' "	
19 00	206 51.3	194 10.1	N 11 35.3	93 14.4	N 23 46.8	259 19.8	S 19 17.9	265 10.9	S 20 16.5	Acamar	315 48.7	S 40 27.8	
	221 53.7	209 13.5		108 15.6	46.5	274 22.0	17.9	280 13.2	16.5	Achernar	335 56.7	S 57 26.1	
	236 56.2	224 16.9		123 16.8	46.3	289 24.2	17.8	295 15.6	16.5	Acrux	173 52.7	S 62 53.2	
	251 58.6	239 20.4	.. 32.3	138 18.0	.. 46.1	304 26.3	.. 17.8	310 18.0	.. 16.4	Adhara	255 43.6	S 28 55.5	
	267 01.1	254 23.8	31.3	153 19.2	45.9	319 28.5	17.7	325 20.4	16.4	Aldebaran	291 34.9	N 16 25.8	
05	282 03.6	269 27.2	30.3	168 20.3	45.6	334 30.7	17.7	340 22.8	16.4				
WEDNESDAY	06	297 06.0	284 30.6	N 11 29.3	183 21.5	N 23 45.4	349 32.9	S 19 17.6	355 25.1	S 20 16.4	Alioth	166 54.8	N 56 10.3
	07	312 08.5	299 34.0	28.4	198 22.7	45.2	4 35.1	17.5	10 27.5	16.4	Alkaid	153 29.5	N 49 30.4
	08	327 11.0	314 37.4	27.4	213 23.9	44.9	19 37.3	17.5	25 29.9	16.4	Al Na'ir	28 33.5	S 47 08.8
	09	342 13.4	329 40.8	.. 26.4	228 25.1	.. 44.7	34 39.5	.. 17.4	40 32.3	.. 16.4	Alnilam	276 26.6	S 1 13.8
	10	357 15.9	344 44.1	25.4	243 26.3	44.5	49 41.6	17.4	55 34.6	16.3	Alphard	218 34.7	S 8 29.6
11	12 18.4	359 47.5	24.4	258 27.4	44.2	64 43.8	17.3	70 37.0	16.3				
12	27 20.8	14 50.9	N 11 23.4	273 28.6	N 23 44.0	79 46.0	S 19 17.2	85 39.4	S 20 16.3	Alphecca	126 44.1	N 26 50.6	
13	42 23.3	29 54.3	22.5	288 29.8	43.8	94 48.2	17.2	100 41.8	16.3	Alpheratz	358 24.6	N 28 52.4	
14	57 25.8	44 57.7	21.5	303 31.0	43.5	109 50.4	17.1	115 44.2	16.3	Altair	62 46.7	N 8 45.8	
15	72 28.2	60 01.0	.. 20.5	318 32.2	.. 43.3	124 52.6	.. 17.1	130 46.5	.. 16.3	Ankaa	353 55.0	S 42 31.0	
16	87 30.7	75 04.4	19.5	333 33.4	43.1	139 54.8	17.0	145 48.9	16.3	Antares	113 14.4	S 26 20.7	
17	102 33.1	90 07.8	18.6	348 34.5	42.8	154 57.0	17.0	160 51.3	16.3				
18	117 35.6	105 11.1	N 11 17.6	3 35.7	N 23 42.6	169 59.2	S 19 16.9	175 53.7	S 20 16.2	Arcturus	146 31.4	N 19 23.0	
19	132 38.1	120 14.5	16.6	18 36.9	42.4	185 01.3	16.8	190 56.1	16.2	Atria	108 51.2	S 68 57.3	
20	147 40.5	135 17.8	15.6	33 38.1	42.1	200 03.5	16.8	205 58.4	16.2	Avior	234 34.1	S 59 23.5	
21	162 43.0	150 21.2	.. 14.6	48 39.3	.. 41.9	215 05.7	.. 16.7	221 00.8	.. 16.2	Bellatrix	279 14.6	N 6 18.7	
22	177 45.5	165 24.6	13.7	63 40.4	41.7	230 07.9	16.7	236 03.2	16.2	Betelgeuse	271 44.2	N 7 23.8	
23	192 47.9	180 27.9	12.7	78 41.6	41.4	245 10.1	16.6	251 05.6	16.2				
20 00	207 50.4	195 31.2	N 11 11.7	93 42.8	N 23 41.2	260 12.3	S 19 16.6	266 08.0	S 20 16.2	Canopus	264 13.9	S 52 40.8	
	222 52.9	210 34.6	10.7	108 44.0	41.0	275 14.5	16.5	281 10.3	16.1	Capella	281 33.1	N 45 57.6	
	237 55.3	225 37.9	09.8	123 45.2	40.7	290 16.7	16.4	296 12.7	16.1	Deneb	49 58.4	N 45 08.2	
	252 57.8	240 41.2	.. 08.8	138 46.3	.. 40.5	305 18.9	.. 16.4	311 15.1	.. 16.1	Denebola	183 13.6	N 14 47.3	
	268 00.3	255 44.6	07.8	153 47.5	40.3	320 21.1	16.3	326 17.5	16.1	Diphda	349 35.8	S 18 12.1	
05	283 02.7	270 47.9	06.9	168 48.7	40.0	335 23.3	16.3	341 19.9	16.1				
THURSDAY	06	298 05.2	285 51.2	N 11 05.9	183 49.9	N 23 39.8	350 25.4	S 19 16.2	356 22.2	S 20 16.1	Dubhe	194 39.6	N 61 57.8
	07	313 07.6	300 54.5	04.9	198 51.1	39.6	5 27.6	16.2	11 24.6	16.1	Elnath	279 02.7	N 28 34.5
	08	328 10.1	315 57.9	04.0	213 52.2	39.3	20 29.8	16.1	26 27.0	16.0	Eltanin	91 04.2	N 51 29.4
	09	343 12.6	331 01.2	.. 03.0	228 53.4	.. 39.1	35 32.0	.. 16.0	41 29.4	.. 16.0	Enif	34 26.0	N 9 41.7
	10	358 15.0	346 04.5	02.0	243 54.6	38.9	50 34.2	16.0	56 31.8	16.0	Fomalhaut	16 07.7	S 29 49.7
11	13 17.5	1 07.8	01.1	258 55.8	38.6	65 36.4	15.9	71 34.1	16.0				
12	28 20.0	16 11.1	N 11 00.1	273 56.9	N 23 38.4	80 38.6	S 19 15.9	86 36.5	S 20 16.0	Gacrux	172 44.3	S 56 53.9	
13	43 22.4	31 14.4	10 59.2	288 58.1	38.2	95 40.8	15.8	101 38.9	16.0	Gienah	176 32.6	S 17 19.7	
14	58 24.9	46 17.7	58.2	303 59.3	37.9	110 43.0	15.8	116 41.3	16.0	Hadar	149 43.2	S 60 11.2	
15	73 27.4	61 21.0	.. 57.2	319 00.5	.. 37.7	125 45.2	.. 15.7	131 43.7	.. 16.0	Hamal	328 45.6	N 23 16.6	
16	88 29.8	76 24.2	56.3	334 01.7	37.4	140 47.4	15.6	146 46.1	15.9	Kaus Aust.	84 36.0	S 34 24.1	
17	103 32.3	91 27.5	55.3	349 02.8	37.2	155 49.6	15.6	161 48.4	15.9				
18	118 34.8	106 30.8	N 10 54.4	4 04.0	N 23 37.0	170 51.8	S 19 15.5	176 50.8	S 20 15.9	Kochab	137 17.2	N 74 18.9	
19	133 37.2	121 34.1	53.4	19 05.2	36.7	185 54.0	15.5	191 53.2	15.9	Markab	14 17.9	N 14 59.6	
20	148 39.7	136 37.4	52.5	34 06.4	36.5	200 56.2	15.4	206 55.6	15.9	Menkar	314 56.6	N 3 56.1	
21	163 42.1	151 40.6	.. 51.5	49 07.5	.. 36.3	215 58.4	.. 15.4	221 58.0	.. 15.9	Menkent	148 53.7	S 36 10.8	
22	178 44.6	166 43.9	50.5	64 08.7	36.0	231 00.6	15.3	237 00.4	15.9	Miaplacidus	221 47.7	S 69 33.8	
23	193 47.1	181 47.2	49.6	79 09.9	35.8	246 02.8	15.2	252 02.8	15.9				
21 00	208 49.5	196 50.4	N 10 48.6	94 11.1	N 23 35.5	261 05.0	S 19 15.2	267 05.1	S 20 15.8	Mirfak	309 37.3	N 49 43.4	
	223 52.0	211 53.7	47.7	109 12.2	35.3	276 07.2	15.1	282 07.5	15.8	Nunki	76 47.1	S 26 20.6	
	238 54.5	226 56.9	46.7	124 13.4	35.1	291 09.4	15.1	297 09.9	15.8	Peacock	54 21.4	S 56 51.4	
	253 56.9	242 00.2	.. 45.8	139 14.6	.. 34.8	306 11.6	.. 15.0	312 12.3	.. 15.8	Pollux	244 16.0	N 28 07.2	
	268 59.4	257 03.4	44.8	154 15.8	34.6	321 13.8	15.0	327 14.7	15.8	Procyon	245 41.1	N 5 19.3	
04	284 01.9	272 06.7	43.9	169 16.9	34.3	336 16.0	14.9	342 17.1	15.8				
FRIDAY	06	299 04.3	287 09.9	N 10 42.9	184 18.1	N 23 34.1	351 18.2	S 19 14.9	357 19.4	S 20 15.8	Rasalhague	96 42.9	N 12 35.2
	07	314 06.8	302 13.1	42.0	199 19.3	33.9	6 20.4	14.8	12 21.8	15.8	Regulus	208 25.3	N 12 09.4
	08	329 09.2	317 16.4	41.1	214 20.4	33.6	21 22.6	14.7	27 24.2	15.7	Rigel	281 50.2	S 8 15.0
	09	344 11.7	332 19.6	.. 40.1	229 21.6	.. 33.4	36 24.8	.. 14.7	42 26.6	.. 15.7	Rigel Kent.	140 45.0	S 60 40.5
	10	359 14.2	347 22.8	39.2	244 22.8	33.1	51 27.0	14.6	57 29.0	15.7	Sabik	102 57.6	S 15 40.6
11	14 16.6	2 26.1	38.2	259 24.0	32.9	66 29.2	14.6	72 31.4	15.7				
12	29 19.1	17 29.3	N 10 37.3	274 25.1	N 23 32.7	81 31.4	S 19 14.5	87 33.8	S 20 15.7	Schedar	350 26.0	N 56 19.3	
13	44 21.6	32 32.5	36.4	289 26.3	32.4	96 33.6	14.5	102 36.2	15.7	Shaula	97 15.3	S 37 04.5	
14	59 24.0	47 35.7	35.4	304 27.5	32.2	111 35.8	14.4	117 38.5	15.7	Sirius	259 08.6	S 16 40.0	
15	74 26.5	62 38.9	.. 34.5	319 28.6	.. 31.9	126 38.0	.. 14.4	132 40.9	.. 15.7	Spica	159 12.5	S 10 57.6	
16	89 29.0	77 42.1	33.6	334 29.8	31.7	141 40.2	14.3	147 43.3	15.6	Suhail	223 21.3	S 43 16.9	
17	104 31.4	92 45.3	32.6	349 31.0	31.5	156 42.4	14.3	162 45.7	15.6				
18	119 33.9	107 48.5	N 10 31.7	4 32.2	N 23 31.2	171 44.6	S 19 14.2	177 48.1	S 20 15.6	Vega	81 05.5	N 38 44.6	
19	134 36.4	122 51.7	30.7	19 33.3	31.0	186 46.8	14.1	192 50.5	15.6	Zuben'ubi	137 48.8	S 15 52.9	
20	149 38.8	137 54.9	29.8	34 34.5	30.7	201 49.0	14.1	207 52.9	15.6				
21	164 41.3	152 58.1	.. 28.9	49 35.7	.. 30.5	216 51.2	.. 14.0	222 55.3	.. 15.6		S.H.A.	Mer. Pass.	
22	179 43.7	168 01.2	28.0	64 36.8	30.2	231 53.4	14.0	237 57.6	15.6	Venus	347 40.8	10 55	
23	194 46.2	183 04.4	27.0	79 38.0	30.0	246 55.6	13.9	253 00.0	15.6	Mars	245 52.4	17 44	
Mer. Pass.	h 10 07.0	° 3.3	d 1.0	° 1.2	d 0.2	° 2.2	d 0.1	° 2.4	d 0.0	Jupiter	52 21.9	6 38	
										Saturn	58 17.6	6 14	

G.M.T.	SUN				MOON				Lat.	Twilight		Sun-rise	Moonrise					
	G.H.A.		Dec.	G.H.A.	v	Dec.	d	H.P.		Naut.	Civil		19	20	21	22		
	°	'										°					'	°
WEDNESDAY	19 00	180	11-1	N11 00-8	132	30-8	10-7	N17 36-3	3-9	55-8	N 72	03 11	03 58	□	□	06 14		
	01	195	11-2	01-7	147	00-5	10-7	17 40-2	3-8	55-8	N 70	03 32	04 05	05 34	06 23	07 40		
	02	210	11-3	02-6	161	30-2	10-7	17 44-0	3-6	55-8	68	03 48	04 22	05 50	06 22	07 12		
	03	225	11-5	03-4	175	59-9	10-7	17 47-6	3-6	55-8	66	04 02	04 36	06 17	06 53	07 43		
	04	240	11-6	04-3	190	29-6	10-7	17 51-2	3-5	55-7	64	04 14	04 48	06 37	07 16	08 06		
	05	255	11-7	05-2	204	59-3	10-8	17 54-7	3-3	55-7	62	04 24	04 58	06 54	07 34	08 24		
	06	270	11-9	N11 06-0	219	29-1	10-7	N17 58-0	3-3	55-7	60	04 36	05 10	07 08	07 49	08 39		
	07	285	12-0	06-9	233	58-8	10-8	18 01-3	3-2	55-6	N 58	04 52	05 26	07 20	08 02	08 52		
	08	300	12-2	07-8	248	28-6	10-7	18 04-5	3-1	55-6	56	05 08	05 42	07 30	08 13	09 03		
	09	315	12-3	08-6	262	58-3	10-8	18 07-6	3-0	55-6	54	05 20	05 54	07 39	08 23	09 13		
	10	330	12-4	09-5	277	28-1	10-8	18 10-6	2-9	55-6	52	05 31	06 05	07 48	08 32	09 22		
	11	345	12-6	10-4	291	57-9	10-9	18 13-5	2-8	55-5	50	05 40	06 14	07 55	08 40	09 29		
	12	0	12-7	N11 11-2	306	27-8	10-8	N18 16-3	2-7	55-5	45	05 58	06 32	08 11	08 57	09 46		
	13	15	12-8	12-1	320	57-6	10-8	18 19-0	2-6	55-5	N 40	06 13	06 47	08 24	09 10	10 00		
	14	30	13-0	13-0	335	27-4	10-9	18 21-6	2-6	55-5	35	06 25	07 00	08 35	09 22	10 11		
	15	45	13-1	13-8	349	57-3	10-9	18 24-2	2-4	55-4	30	06 34	07 09	08 44	09 32	10 21		
	16	60	13-3	14-7	4	27-2	10-9	18 26-6	2-3	55-4	20	06 49	07 24	09 01	09 49	10 38		
	17	75	13-4	15-5	18	57-1	10-9	18 28-9	2-3	55-4	N 10	07 01	07 35	09 16	10 05	10 54		
	18	90	13-5	N11 16-4	33	27-0	10-9	N18 31-2	2-1	55-4	0	07 10	07 44	09 30	10 19	11 08		
	19	105	13-7	17-3	47	56-9	10-9	18 33-3	2-1	55-3	S 10	07 18	07 52	09 43	10 34	11 22		
	20	120	13-8	18-1	62	26-8	11-0	18 35-4	1-9	55-3	20	07 24	07 58	09 58	10 49	11 37		
	21	135	13-9	19-0	76	56-8	11-0	18 37-3	1-9	55-3	30	07 29	08 03	10 15	11 07	11 55		
	22	150	14-1	19-9	91	26-8	11-0	18 39-2	1-8	55-3	35	07 32	08 06	10 25	11 17	12 05		
	23	165	14-2	20-7	105	56-8	11-0	18 41-0	1-7	55-3	40	07 34	08 08	10 36	11 28	12 16		
THURSDAY	20 00	180	14-3	N11 21-6	120	26-8	11-0	N18 42-7	1-5	55-2	S 50	06 16	06 50	11 05	11 59	12 46		
	01	195	14-5	22-4	134	56-8	11-1	18 44-2	1-5	55-2	52	06 39	07 13	11 13	12 07	12 54		
	02	210	14-6	23-3	149	26-9	11-1	18 45-7	1-4	55-2	54	06 40	07 14	11 21	12 16	13 03		
	03	225	14-7	24-2	163	57-0	11-1	18 47-1	1-3	55-2	56	06 51	07 25	11 31	12 26	13 12		
	04	240	14-9	25-0	178	27-1	11-1	18 48-4	1-2	55-1	58	06 42	07 16	11 42	12 37	13 23		
	05	255	15-0	25-9	192	57-2	11-1	18 49-6	1-1	55-1	S 60	06 42	07 16	11 54	12 51	13 36		
	06	270	15-1	N11 26-7	207	27-3	11-2	N18 50-7	1-0	55-1	Lat.	Sun-set	Twilight		Moonset			
	07	285	15-3	27-6	221	57-5	11-1	18 51-7	1-0	55-1			Civil	Naut.	19	20	21	22
	08	300	15-4	28-5	236	27-6	11-2	18 52-7	0-8	55-1	°	h m	h m	h m	h m	h m	h m	
	09	315	15-5	29-3	250	57-8	11-3	18 53-5	0-7	55-0	N 72	20 51	23 17	02 28	□	□	05 18	
	10	330	15-7	30-2	265	28-1	11-2	18 54-2	0-7	55-0	N 70	20 29	22 06	01 14	02 36	03 29	03 52	
	11	345	15-8	31-0	279	58-3	11-3	18 54-9	0-5	55-0	68	20 12	21 30	00 37	01 49	02 40	03 13	
	12	0	15-9	N11 31-9	294	28-6	11-2	N18 55-4	0-5	55-0	66	19 59	21 05	00 11	01 18	02 09	02 45	
	13	15	16-1	32-7	308	58-8	11-3	18 55-9	0-4	55-0	64	19 48	20 46	24 55	00 55	01 46	02 24	
	14	30	16-2	33-6	323	29-1	11-4	18 56-3	0-2	54-9	62	19 38	20 31	24 37	00 37	01 28	02 08	
	15	45	16-3	34-4	337	59-5	11-3	18 56-5	0-2	54-9	60	19 30	20 18	24 21	00 21	01 13	01 54	
	16	60	16-5	35-3	352	29-8	11-4	18 56-7	0-1	54-9	N 58	19 23	20 07	24 09	00 09	01 00	01 41	
	17	75	16-6	36-2	7	00-2	11-4	18 56-8	0-0	54-9	56	19 17	19 58	23 58	24 49	00 49	01 31	
	18	90	16-7	N11 37-0	21	30-6	11-4	N18 56-8	0-1	54-9	54	19 11	19 50	23 48	24 39	00 39	01 22	
	19	105	16-8	37-9	36	01-0	11-5	18 56-7	0-2	54-8	52	19 06	19 43	23 39	24 30	00 30	01 13	
	20	120	17-0	38-7	50	31-5	11-4	18 56-5	0-3	54-8	50	19 01	19 36	23 32	24 22	00 22	01 06	
	21	135	17-1	39-6	65	01-9	11-5	18 56-2	0-3	54-8	45	18 51	19 23	23 15	24 05	00 05	00 50	
	22	150	17-2	40-4	79	32-4	11-6	18 55-9	0-5	54-8	N 40	18 43	19 12	23 02	23 52	24 37	00 37	
	23	165	17-4	41-3	94	03-0	11-5	18 55-4	0-5	54-8	35	18 36	19 03	22 50	23 40	24 26	00 26	
FRIDAY	21 00	180	17-5	N11 42-1	108	33-5	11-6	N18 54-9	0-7	54-8	30	18 30	18 55	22 40	23 30	24 17	00 17	
	01	195	17-6	43-0	123	04-1	11-6	18 54-2	0-7	54-7	20	18 20	18 42	22 23	23 13	24 00	00 00	
	02	210	17-8	43-8	137	34-7	11-6	18 53-5	0-8	54-7	N 10	18 11	18 32	22 08	22 57	23 45	24 31	
	03	225	17-9	44-7	152	05-3	11-6	18 52-7	0-9	54-7	0	18 02	18 23	21 54	22 43	23 31	24 18	
	04	240	18-0	45-5	166	35-9	11-7	18 51-8	1-0	54-7	S 10	17 54	18 15	21 39	22 28	23 17	24 05	
	05	255	18-1	46-4	181	06-6	11-7	18 50-8	1-1	54-7	20	17 45	18 08	21 24	22 13	23 02	23 52	
	06	270	18-3	N11 47-2	195	37-3	11-8	N18 49-7	1-2	54-7	30	17 36	18 00	21 07	21 55	22 45	23 36	
	07	285	18-4	48-1	210	08-1	11-7	18 48-5	1-3	54-6	35	17 30	17 56	20 57	21 45	22 35	23 27	
	08	300	18-5	48-9	224	38-8	11-8	18 47-2	1-3	54-6	40	17 24	17 51	20 45	21 33	22 24	23 17	
	09	315	18-7	49-8	239	09-6	11-8	18 45-9	1-4	54-6	45	17 16	17 46	20 32	21 20	22 11	23 05	
	10	330	18-8	50-6	253	40-4	11-8	18 44-5	1-6	54-6	S 50	17 08	17 41	20 15	21 03	21 55	22 50	
	11	345	18-9	51-5	268	11-2	11-9	18 42-9	1-6	54-6	52	17 04	17 38	20 08	20 55	21 47	22 43	
	12	0	19-0	N11 52-3	282	42-1	11-9	N18 41-3	1-7	54-6	54	16 59	17 36	19 59	20 46	21 38	22 36	
	13	15	19-2	53-2	297	13-0	11-9	18 39-6	1-8	54-6	56	16 54	17 33	19 49	20 36	21 29	22 27	
	14	30	19-3	54-0	311	43-9	12-0	18 37-8	1-9	54-5	58	16 49	17 30	19 38	20 24	21 18	22 17	
	15	45	19-4	54-9	326	14-9	11-9	18 35-9	1-9	54-5	S 60	16 43	17 26	19 25	20 11	21 05	22 06	
	16	60	19-6	55-7	340	45-8	12-0	18 34-0	2-1	54-5	Day	SUN		Mer. Pass.		MOON		Phase
	17	75	19-7	56-6	355	16-8	12-1	18 31-9	2-1	54-5		Eqn. of Time	Mer. Pass.	Upper	Lower	Age		
	18	90	19-8	N11 57-4	9	47-9	12-0	N18 29-8	2-2	54-5	19	m s	h m	h m	h m	d		
	19	105	19-9	58-3	24	18-9	12-1	18 27-6	2-3	54-5	20	00 44	00 51	15 42	03 17	04		
	20	120	20-1	59-1	38	50-0	12-1	18 25-3	2-4	54-5	21	00 57	01 03	16 31	04 06	05		
	21	135	20-2	12 00-0	53	21-1	12-2	18 22-9	2-5	54-5	19	00 44	00 51	15 42	03 17	04		
	22	150	20-3	00-8	67	52-3	12-1	18 20-4	2-5	54-4	20	00 57	01 03	16 31	04 06	05		
	23	165	20-4	01-7	82	23-4	12-2	18 17-9	2-7	54-4	21	01 0						

G.M.T.	ARIES		VENUS -3.7		MARS +1.2		JUPITER -1.8		SATURN +0.8		STARS		
	G.H.A.		G.H.A.	Dec.	G.H.A.	Dec.	G.H.A.	Dec.	G.H.A.	Dec.	Name	S.H.A.	Dec.
d h	° ' "		° ' "	° ' "	° ' "	° ' "	° ' "	° ' "	° ' "	° ' "		° ' "	° ' "
22 00	209 48.7		198 07.6	N10 26.1	94 39.2	N23 29.7	261 57.8	S19 13.9	268 02.4	S20 15.6	Acamar	315 48.7	S 40 27.8
01	224 51.1		213 10.8	25.2	109 40.3	29.5	277 00.0	13.8	283 04.8	15.5	Achernar	335 56.7	S 57 26.1
02	239 53.6		228 13.9	24.3	124 41.5	29.3	292 02.2	13.8	298 07.2	15.5	Acrux	173 52.7	S 62 53.2
03	254 56.1		243 17.1	.. 23.3	139 42.7	.. 29.0	307 04.4	.. 13.7	313 09.6	.. 15.5	Adhara	255 43.6	S 28 55.5
04	269 58.5		258 20.3	22.4	154 43.9	28.8	322 06.6	13.7	328 12.0	15.5	Aldebaran	291 34.9	N 16 25.8
05	285 01.0		273 23.4	21.5	169 45.0	28.5	337 08.8	13.6	343 14.4	15.5			
06	300 03.5		288 26.6	N10 20.6	184 46.2	N23 28.3	352 11.0	S19 13.6	358 16.8	S20 15.5	Alioth	166 54.8	N 56 10.3
07	315 05.9		303 29.7	19.7	199 47.4	28.0	7 13.2	13.5	13 19.1	15.5	Alkaid	153 29.5	N 49 30.4
08	330 08.4		318 32.9	18.7	214 48.5	27.8	22 15.4	13.4	28 21.5	15.5	Al Na'ir	28 33.5	S 47 08.8
09	345 10.9		333 36.0	.. 17.8	229 49.7	.. 27.5	37 17.7	.. 13.4	43 23.9	.. 15.5	Alnilam	276 26.6	S 1 13.8
10	0 13.3		348 39.1	16.9	244 50.9	27.3	52 19.9	13.3	58 26.3	15.4	Alphard	218 34.7	S 8 29.6
11	15 15.8		3 42.3	16.0	259 52.0	27.1	67 22.1	13.3	73 28.7	15.4			
12	30 18.2		18 45.4	N10 15.1	274 53.2	N23 26.8	82 24.3	S19 13.2	88 31.1	S20 15.4	Alphecca	126 44.1	N 26 50.6
13	45 20.7		33 48.5	14.2	289 54.4	26.6	97 26.5	13.2	103 33.5	15.4	Alpheratz	358 24.6	N 28 52.4
14	60 23.2		48 51.7	13.3	304 55.5	26.3	112 28.7	13.1	118 35.9	15.4	Altair	62 46.7	N 8 45.8
15	75 25.6		63 54.8	.. 12.4	319 56.7	.. 26.1	127 30.9	.. 13.1	133 38.3	.. 15.4	Ankaa	353 55.0	S 42 31.0
16	90 28.1		78 57.9	11.4	334 57.9	25.8	142 33.1	13.0	148 40.7	15.4	Antares	113 14.4	S 26 20.7
17	105 30.6		94 01.0	10.5	349 59.0	25.6	157 35.3	13.0	163 43.0	15.4			
18	120 33.0		109 04.1	N10 09.6	5 00.2	N23 25.3	172 37.5	S19 12.9	178 45.4	S20 15.4	Arcturus	146 31.4	N 19 23.0
19	135 35.5		124 07.2	08.7	20 01.4	25.1	187 39.7	12.9	193 47.8	15.3	Atria	108 51.2	S 68 57.3
20	150 38.0		139 10.3	07.8	35 02.5	24.8	202 42.0	12.8	208 50.2	15.3	Avior	234 34.1	S 59 23.5
21	165 40.4		154 13.4	.. 06.9	50 03.7	.. 24.6	217 44.2	.. 12.7	223 52.6	.. 15.3	Bellatrix	279 14.6	N 6 18.7
22	180 42.9		169 16.5	06.0	65 04.9	24.3	232 46.4	12.7	238 55.0	15.3	Betelgeuse	271 44.2	N 7 23.9
23	195 45.3		184 19.6	05.1	80 06.0	24.1	247 48.6	12.6	253 57.4	15.3			
23 00	210 47.8		199 22.7	N10 04.2	95 07.2	N23 23.9	262 50.8	S19 12.6	268 59.8	S20 15.3	Canopus	264 13.9	S 52 40.8
01	225 50.3		214 25.8	03.3	110 08.3	23.6	277 53.0	12.5	284 02.2	15.3	Capella	281 33.1	N 45 57.6
02	240 52.7		229 28.9	02.4	125 09.5	23.4	292 55.2	12.5	299 04.6	15.3	Deneb	49 58.4	N 45 08.2
03	255 55.2		244 31.9	.. 01.5	140 10.7	.. 23.1	307 57.4	.. 12.4	314 07.0	.. 15.3	Denebola	183 13.6	N 14 47.3
04	270 57.7		259 35.0	10 00.6	155 11.8	22.9	322 59.6	12.4	329 09.4	15.2	Diphda	349 35.7	S 18 12.1
05	286 00.1		274 38.1	9 59.8	170 13.0	22.6	338 01.9	12.3	344 11.8	15.2			
06	301 02.6		289 41.1	N 9 58.9	185 14.2	N23 22.4	353 04.1	S19 12.3	359 14.2	S20 15.2	Dubhe	194 39.6	N 61 57.8
07	316 05.1		304 44.2	58.0	200 15.3	22.1	8 06.3	12.2	14 16.6	15.2	Elath	279 02.7	N 28 34.5
08	331 07.5		319 47.2	57.1	215 16.5	21.9	23 08.5	12.2	29 18.9	15.2	Eltanin	91 04.2	N 51 29.4
09	346 10.0		334 50.3	.. 56.2	230 17.7	.. 21.6	38 10.7	.. 12.1	44 21.3	.. 15.2	Enif	34 26.0	N 9 41.7
10	1 12.5		349 53.3	55.3	245 18.8	21.4	53 12.9	12.1	59 23.7	15.2	Fomalhaut	16 07.7	S 29 49.7
11	16 14.9		4 56.4	54.4	260 20.0	21.1	68 15.1	12.0	74 26.1	15.2			
12	31 17.4		19 59.4	N 9 53.6	275 21.1	N23 20.9	83 17.4	S19 12.0	89 28.5	S20 15.2	Gacrux	172 44.3	S 56 53.9
13	46 19.8		35 02.5	52.7	290 22.3	20.6	98 19.6	11.9	104 30.9	15.2	Gienah	176 32.6	S 17 19.7
14	61 22.3		50 05.5	51.8	305 23.5	20.4	113 21.8	11.9	119 33.3	15.1	Hadar	149 43.2	S 60 11.2
15	76 24.8		65 08.5	.. 50.9	320 24.6	.. 20.1	128 24.0	.. 11.8	134 35.7	.. 15.1	Hamal	328 45.6	N 23 16.6
16	91 27.2		80 11.6	50.0	335 25.8	19.8	143 26.2	11.8	149 38.1	15.1	Kaus Aust.	84 35.9	S 34 24.1
17	106 29.7		95 14.6	49.2	350 26.9	19.6	158 28.4	11.7	164 40.5	15.1			
18	121 32.2		110 17.6	N 9 48.3	5 28.1	N23 19.3	173 30.7	S19 11.7	179 42.9	S20 15.1	Kochab	137 17.2	N 74 18.9
19	136 34.6		125 20.6	47.4	20 29.3	19.1	188 32.9	11.6	194 45.3	15.1	Markab	14 17.8	N 14 59.6
20	151 37.1		140 23.6	46.5	35 30.4	18.8	203 35.1	11.5	209 47.7	15.1	Menkar	314 56.6	N 3 56.1
21	166 39.6		155 26.6	.. 45.7	50 31.6	.. 18.6	218 37.3	.. 11.5	224 50.1	.. 15.1	Menkent	148 53.7	S 36 10.8
22	181 42.0		170 29.6	44.8	65 32.8	18.3	233 39.5	11.4	239 52.5	15.1	Miaplacidus	221 47.8	S 69 33.8
23	196 44.5		185 32.6	43.9	80 33.9	18.1	248 41.7	11.4	254 54.9	15.0			
24 00	211 47.0		200 35.6	N 9 43.1	95 35.1	N23 17.8	263 44.0	S19 11.3	269 57.3	S20 15.0	Mirfak	309 37.3	N 49 43.4
01	226 49.4		215 38.6	42.2	110 36.2	17.6	278 46.2	11.3	284 59.7	15.0	Nunki	76 47.1	S 26 20.6
02	241 51.9		230 41.6	41.3	125 37.4	17.3	293 48.4	11.2	300 02.1	15.0	Peacock	54 21.4	S 56 51.4
03	256 54.3		245 44.6	.. 40.5	140 38.5	.. 17.1	308 50.6	.. 11.2	315 04.5	.. 15.0	Pollux	244 16.0	N 28 07.2
04	271 56.8		260 47.6	39.6	155 39.7	16.8	323 52.8	11.1	330 06.9	15.0	Procyon	245 41.1	N 5 19.3
05	286 59.3		275 50.5	38.8	170 40.9	16.6	338 55.0	11.1	345 09.3	15.0			
06	302 01.7		290 53.5	N 9 37.9	185 42.0	N23 16.3	353 57.3	S19 11.0	0 11.7	S20 15.0	Rasalhague	96 42.8	N 12 35.2
07	317 04.2		305 56.5	37.1	200 43.2	16.0	8 59.5	11.0	15 14.1	15.0	Regulus	208 25.3	N 12 09.4
08	332 06.7		320 59.4	36.2	215 44.3	15.8	24 01.7	10.9	30 16.5	15.0	Rigel	281 50.2	S 8 15.0
09	347 09.1		336 02.4	.. 35.4	230 45.5	.. 15.5	39 03.9	.. 10.9	45 18.9	.. 14.9	Rigel Kent.	140 45.0	S 60 40.5
10	2 11.6		351 05.4	34.5	245 46.7	15.3	54 06.2	10.8	60 21.3	14.9	Sabik	102 57.6	S 15 40.6
11	17 14.1		6 08.3	33.7	260 47.8	15.0	69 08.4	10.8	75 23.7	14.9			
12	32 16.5		21 11.3	N 9 32.8	275 49.0	N23 14.8	84 10.6	S19 10.7	90 26.1	S20 14.9	Schedar	350 26.0	N 56 19.3
13	47 19.0		36 14.2	32.0	290 50.1	14.5	99 12.8	10.7	105 28.5	14.9	Shaula	97 15.2	S 37 04.5
14	62 21.4		51 17.2	31.1	305 51.3	14.3	114 15.0	10.6	120 30.9	14.9	Sirius	259 08.7	S 16 40.0
15	77 23.9		66 20.1	.. 30.3	320 52.4	.. 14.0	129 17.3	.. 10.6	135 33.3	.. 14.9	Spica	159 12.5	S 10 57.6
16	92 26.4		81 23.0	29.4	335 53.6	13.8	144 19.5	10.5	150 35.7	14.9	Suhail	223 21.4	S 43 16.9
17	107 28.8		96 26.0	28.6	350 54.8	13.5	159 21.7	10.5	165 38.1	14.9			
18	122 31.3		111 28.9	N 9 27.8	5 55.9	N23 13.2	174 23.9	S19 10.4	180 40.5	S20 14.9	Vega	81 05.5	N 38 44.6
19	137 33.8		126 31.8	26.9	20 57.1	13.0	189 26.2	10.4	195 42.9	14.9	Zuben'ubi	137 48.8	S 15 52.9
20	152 36.2		141 34.7	26.1	35 58.2	12.7	204 28.4	10.3	210 45.3	14.8			
21	167 38.7		156 37.6	.. 25.3	50 59.4	.. 12.5	219 30.6	.. 10.3	225 47.7	.. 14.8			
22	182 41.2		171 40.6	24.4	66 00.5	12.2	234 32.8	10.2	240 50.1	14.8	Venus	348 34.9	Mer. Pass. 10 40
23	197 43.6		186 43.5	23.6	81 01.7	12.0	249 35.1	10.2	255 52.5	14.8	Mars	244 19.4	17 38
											Jupiter	52 03.0	6 28
											Saturn	58 12.0	6 03
Mer. Pass.	h m		v 3.0	d 0.9	v 1.2	d 0.3	v 2.2	d 0.1	v 2.4	d 0.0			

G.M.T.	SUN				MOON				Lat.	Twilight		Sun-rise	Moonrise							
	G.H.A.		Dec.	H.P.	G.H.A.	v	Dec.	d		Naut.	Civil		22		23		24	25		
	°	'											h	m	h	m			h	m
d h	°	'	°	'	°	'	°	'	°	'	°	'	°	'	°	'	°	'		
22 00	180	20.6	N12	02.5	96	54.6	12.3	N18	15.2	2.7	54.4	N 72	////	////	02 52	06 14	08 25	10 12	11 54	
01	195	20.7		03.3	111	25.9	12.2	18	12.5	2.8	54.4	N 70	////	01 32	03 16	07 40	09 08	10 39	12 10	
02	210	20.8		04.2	125	57.1	12.3	18	09.7	2.9	54.4	68	////	02 14	03 35	08 19	09 36	10 59	12 24	
03	225	20.9	..	05.0	140	28.4	12.3	18	06.8	3.0	54.4	66	////	02 41	03 50	08 46	09 58	11 15	12 35	
04	240	21.1		05.9	150	59.7	12.4	18	03.8	3.0	54.4	64	01 20	03 02	04 02	09 06	10 14	11 27	12 44	
05	255	21.2		06.7	169	31.1	12.3	18	00.8	3.1	54.4	62	01 58	03 18	04 12	09 23	10 28	11 38	12 52	
06	270	21.3	N12	07.6	184	02.4	12.4	N17	57.7	3.3	54.4	60	02 23	03 32	04 21	09 37	10 40	11 48	12 58	
07	285	21.4		08.4	198	33.8	12.5	17	54.4	3.3	54.4	N 58	02 43	03 44	04 29	09 49	10 50	11 56	13 04	
08	300	21.6		09.2	213	05.3	12.4	17	51.1	3.3	54.4	56	02 58	03 53	04 35	09 59	10 59	12 03	13 09	
09	315	21.7	..	10.1	227	36.7	12.5	17	47.8	3.5	54.3	54	03 11	04 02	04 42	10 08	11 07	12 09	13 14	
10	330	21.8		10.9	242	08.2	12.6	17	44.3	3.5	54.3	52	03 23	04 10	04 47	10 16	11 14	12 15	13 18	
11	345	21.9		11.8	256	39.8	12.5	17	40.8	3.7	54.3	50	03 33	04 17	04 52	10 23	11 20	12 20	13 22	
12	0	22.1	N12	12.6	271	11.3	12.6	N17	37.1	3.6	54.3	45	03 53	04 31	05 02	10 39	11 34	12 31	13 30	
13	15	22.2		13.5	285	42.9	12.6	17	33.5	3.8	54.3	N 40	04 08	04 43	05 11	10 51	11 45	12 40	13 37	
14	30	22.3		14.3	300	14.5	12.6	17	29.7	3.9	54.3	35	04 20	04 52	05 19	11 02	11 55	12 48	13 43	
15	45	22.4	..	15.1	314	46.1	12.7	17	25.8	3.9	54.3	30	04 31	05 00	05 25	11 12	12 03	12 55	13 48	
16	60	22.5		16.0	329	17.8	12.7	17	21.9	4.0	54.3	20	04 47	05 14	05 36	11 28	12 17	13 07	13 57	
17	75	22.7		16.8	343	49.5	12.7	17	17.9	4.1	54.3	N 10	04 59	05 24	05 46	11 42	12 30	13 17	14 04	
18	90	22.8	N12	17.6	358	21.2	12.7	N17	13.8	4.2	54.3	0	05 09	05 34	05 55	11 55	12 42	13 27	14 12	
19	105	22.9		18.5	12	52.9	12.8	17	09.6	4.2	54.3	S 10	05 18	05 42	06 04	12 09	12 54	13 37	14 19	
20	120	23.0		19.3	27	24.7	12.8	17	05.4	4.3	54.3	20	05 25	05 51	06 13	12 23	13 06	13 47	14 27	
21	135	23.2	..	20.2	41	56.5	12.9	17	01.1	4.4	54.3	30	05 31	05 59	06 24	12 39	13 21	13 59	14 36	
22	150	23.3		21.0	56	28.4	12.8	16	56.7	4.5	54.3	35	05 34	06 04	06 30	12 48	13 29	14 06	14 41	
23	165	23.4		21.8	71	00.2	12.9	16	52.2	4.5	54.3	40	05 37	06 09	06 37	12 59	13 38	14 13	14 46	
24 00	180	23.5	N12	22.7	85	32.1	12.9	N16	47.7	4.6	54.3	45	05 40	06 14	06 45	13 12	13 49	14 22	14 53	
01	195	23.6		23.5	100	04.0	13.0	16	43.1	4.7	54.3	S 50	05 43	06 21	06 54	13 27	14 02	14 33	15 01	
02	210	23.8		24.3	114	36.0	12.9	16	38.4	4.8	54.3	52	05 44	06 23	06 58	13 34	14 08	14 38	15 05	
03	225	23.9	..	25.2	129	07.9	13.0	16	33.6	4.8	54.3	54	05 45	06 27	07 03	13 42	14 15	14 44	15 09	
04	240	24.0		26.0	143	39.9	13.1	16	28.8	5.0	54.3	56	05 46	06 30	07 09	13 51	14 23	14 50	15 13	
05	255	24.1		26.8	158	12.0	13.0	16	23.8	4.9	54.3	58	05 47	06 33	07 15	14 01	14 31	14 57	15 18	
06	270	24.2	N12	27.7	172	44.0	13.1	N16	18.9	5.1	54.3	S 60	05 49	06 37	07 21	14 12	14 41	15 04	15 23	
07	285	24.4		28.5	187	16.1	13.1	16	13.8	5.1	54.3									
08	300	24.5		29.3	201	48.2	13.1	16	08.7	5.2	54.3	Lat.	Sun-set	Twilight		Moonset				
09	315	24.6	..	30.2	216	20.3	13.2	16	03.5	5.3	54.3			Civil	Naut.	22	23	24	25	
10	330	24.7		31.0	230	52.5	13.2	15	58.2	5.3	54.3	°	h	m	h	m	h	m	h	m
11	345	24.8		31.8	245	24.7	13.2	15	52.9	5.5	54.3	N 72	21 09	////	////	05 18	04 44	04 32	04 23	
12	0	25.0	N12	32.7	259	56.9	13.3	N15	47.4	5.4	54.3	N 70	20 44	22 34	////	03 52	04 01	04 04	04 05	
13	15	25.1		33.5	274	29.2	13.2	15	42.0	5.6	54.3	68	20 25	21 48	////	03 13	03 32	03 43	03 50	
14	30	25.2		34.3	289	01.4	13.3	15	36.4	5.6	54.3	66	20 09	21 19	////	02 45	03 10	03 26	03 38	
15	45	25.3	..	35.2	303	33.7	13.3	15	30.8	5.7	54.3	64	19 57	20 58	22 44	02 24	02 53	03 13	03 28	
16	60	25.4		36.0	318	06.0	13.4	15	25.1	5.8	54.3	62	19 46	20 41	22 04	02 08	02 38	03 01	03 20	
17	75	25.6		36.8	332	38.4	13.3	15	19.3	5.8	54.3	60	19 37	20 27	21 37	01 54	02 26	02 52	03 13	
18	90	25.7	N12	37.7	347	10.7	13.4	N15	13.5	5.9	54.3	N 58	19 30	20 15	21 17	01 41	02 15	02 43	03 06	
19	105	25.8		38.5	1	43.1	13.4	15	07.6	5.9	54.3	56	19 23	20 05	21 01	01 31	02 06	02 35	03 00	
20	120	25.9		39.3	16	15.5	13.5	15	01.7	6.1	54.3	54	19 16	19 56	20 47	01 22	01 58	02 29	02 55	
21	135	26.0	..	40.1	30	48.0	13.4	14	55.6	6.1	54.3	52	19 11	19 48	20 36	01 13	01 51	02 22	02 50	
22	150	26.1		41.0	45	20.4	13.5	14	49.5	6.1	54.3	50	19 06	19 41	20 26	01 06	01 44	02 17	02 46	
23	165	26.3		41.8	59	52.9	13.5	14	43.4	6.2	54.3	45	18 55	19 27	20 05	00 50	01 30	02 05	02 37	
24 00	180	26.4	N12	42.6	74	25.4	13.6	N14	37.2	6.3	54.3	N 40	18 46	19 15	19 50	00 37	01 18	01 55	02 29	
01	195	26.5		43.5	88	58.0	13.5	14	30.9	6.4	54.3	35	18 39	19 05	19 37	00 26	01 08	01 47	02 22	
02	210	26.6		44.3	103	30.5	13.6	14	24.5	6.4	54.3	30	18 32	18 57	19 27	00 17	00 59	01 39	02 17	
03	225	26.7	..	45.1	118	03.1	13.6	14	18.1	6.5	54.3	20	18 21	18 43	19 10	00 00	00 44	01 26	02 06	
04	240	26.8		45.9	132	35.7	13.6	14	11.6	6.5	54.3	N 10	18 11	18 32	18 58	24 31	00 31	01 15	01 57	
05	255	26.9		46.8	147	08.3	13.7	14	05.1	6.6	54.3	0	18 02	18 23	18 47	24 18	00 18	01 04	01 49	
06	270	27.1	N12	47.6	161	41.0	13.6	N13	58.5	6.7	54.3	S 10	17 53	18 14	18 39	24 05	00 05	00 53	01 40	
07	285	27.2		48.4	176	13.6	13.7	13	51.8	6.7	54.3	20	17 43	18 06	18 32	23 52	24 41	00 41	01 31	
08	300	27.3		49.2	190	46.3	13.7	13	45.1	6.8	54.3	30	17 32	17 57	18 25	23 36	24 28	00 28	01 20	
09	315	27.4	..	50.1	205	19.0	13.7	13	38.3	6.9	54.3	35	17 26	17 52	18 22	23 27	24 20	00 20	01 14	
10	330	27.5		50.9	219	51.7	13.8	13	31.4	6.9	54.3	40	17 20	17 47	18 19	23 17	24 12	00 12	01 07	
11	345	27.6		51.7	234	24.5	13.7	13	24.5	7.0	54.3	45	17 11	17 42	18 16	23 05	24 01	00 01	00 59	
12	0	27.8	N12	52.5	248	57.2	13.8	N13	17.5	7.0	54.4	S 50	17 02	17 35	18 13	22 50	23 49	24 49	00 49	
13	15	27.9		53.3	263	30.0	13.8	13	10.5	7.1	54.4	52	16 57	17 32	18 12	22 43	23 43	24 45	00 45	
14	30	28.0		54.2	278	02.8	13.8	13	03.4	7.2	54.4	54	16 53	17 29	18 11	22 36	23 36	24 40	00 40	
15	45	28.1	..	55.0	292	35.6	13.9	12	56.2	7.2	54.4	5								

G.M.T.	ARIES			VENUS -3.9			MARS +1.3			JUPITER -1.9			SATURN +0.8			STARS		
	G.H.A.	G.H.A.	Dec.	G.H.A.	G.H.A.	Dec.	G.H.A.	G.H.A.	Dec.	G.H.A.	G.H.A.	Dec.	G.H.A.	G.H.A.	Dec.	Name	S.H.A.	Dec.
25																		
00	212 46.1	201 46.4 N	9 22.8	96 02.8	N23 11.7		264 37.3	S19 10.1		270 54.9	S20 14.8		Acamar	315 48.7	S 40 27.8			
01	227 48.6	216 49.3	21.9	111.040	11.4		279 39.5	10.1		285 57.3	14.8		Achernar	335 56.7	S 57 26.1			
02	242 51.0	231 52.2	21.1	126 05.2	11.2		294 41.7	10.0		300 59.7	14.8		Acrux	173 52.7	S 62 53.2			
03	257 53.5	246 55.1	.. 20.3	141 06.3	.. 10.9		309 44.0	.. 10.0		316 02.1	.. 14.8		Adhara	255 43.7	S 28 55.5			
04	272 55.9	261 57.9	19.5	156 07.5	10.7		324 46.2	09.9		331 04.5	14.8		Aldebaran	291 35.0	N 16 25.8			
05	287 58.4	277 00.8	18.6	171 08.6	10.4		339 48.4	09.9		346 06.9	14.8							
06	303 00.9	292 03.7 N	9 17.8	186 09.8	N23 10.1		354 50.6	S19 09.8		1 09.3	S20 14.8		Alioth	166 54.8	N 56 10.3			
07	318 03.3	307 06.6	17.0	201 10.9	09.9		9 52.9	09.8		16 11.7	14.7		Alkaid	153 29.5	N 49 30.4			
08	333 05.8	322 09.5	16.2	216 12.1	09.6		24 55.1	09.7		31 14.1	14.7		Al Na'ir	28 33.4	S 47 08.8			
09	348 08.3	337 12.3	.. 15.4	231 13.2	.. 09.4		39 57.3	.. 09.7		46 16.5	.. 14.7		Alnilam	276 26.6	S 1 13.8			
10	3 10.7	352 15.2	14.6	246 14.4	09.1		54 59.6	09.6		61 18.9	14.7		Alphard	218 34.8	S 8 29.6			
11	18 13.2	7 18.1	13.8	261 15.5	08.8		70 01.8	09.6		76 21.3	14.7							
12	33 15.7	22 20.9 N	9 12.9	276 16.7 N23	08.6		85 04.0	S19 09.5		91 23.7	S20 14.7		Alphecca	126 44.1	N 26 50.6			
13	48 18.1	37 23.8	12.1	291 17.8	08.3		100 06.2	09.5		106 26.1	14.7		Alpheratz	358 24.6	N 28 52.4			
14	63 20.6	52 26.6	11.3	306 19.0	08.1		115 08.5	09.4		121 28.5	14.7		Altair	62 46.6	N 8 45.8			
15	78 23.0	67 29.5	.. 10.5	321 20.2	.. 07.8		130 10.7	.. 09.4		136 30.9	.. 14.7		Ankaa	353 55.0	S 42 31.0			
16	93 25.5	82 32.3	09.7	336 21.3	07.5		145 12.9	09.3		151 33.3	14.7		Antares	113 14.4	S 26 20.7			
17	108 28.0	97 35.1	08.9	351 22.5	07.3		160 15.2	09.3		166 35.7	14.7							
18	123 30.4	112 38.0 N	9 08.1	6 23.6 N23	07.0		175 17.4	S19 09.2		181 38.1	S20 14.6		Arcturus	146 31.4	N 19 23.0			
19	138 32.9	127 40.8	07.3	21 24.8	06.8		190 19.6	09.2		196 40.5	14.6		Atria	108 51.2	S 68 57.3			
20	153 35.4	142 43.6	06.5	36 25.9	06.5		205 21.9	09.2		211 42.9	14.6		Avior	234 34.1	S 59 23.5			
21	168 37.8	157 46.5	.. 05.7	51 27.1	.. 06.2		220 24.1	.. 09.1		226 45.3	.. 14.6		Bellatrix	279 14.6	N 6 18.7			
22	183 40.3	172 49.3	04.9	66 28.2	06.0		235 26.3	09.1		241 47.7	14.6		Betelgeuse	271 44.2	N 7 23.9			
23	198 42.8	187 52.1	04.1	81 29.4	05.7		250 28.5	09.0		256 50.1	14.6							
26																		
00	213 45.2	202 54.9 N	9 03.3	96 30.5 N23	05.5		265 30.8	S19 09.0		271 52.5	S20 14.6		Canopus	264 13.9	S 52 40.8			
01	228 47.7	217 57.7	02.6	111 31.7	05.2		280 33.0	08.9		286 54.9	14.6		Capella	281 33.1	N 45 57.6			
02	243 50.2	233 00.5	01.8	126 32.8	04.9		295 35.2	08.9		301 57.4	14.6		Deneb	49 58.3	N 45 08.2			
03	258 52.6	248 03.3	.. 01.0	141 34.0	.. 04.7		310 37.5	.. 08.8		316 59.8	.. 14.6		Denebola	183 13.6	N 14 47.3			
04	273 55.1	263 06.1	9 00.2	156 35.1	04.4		325 39.7	08.8		332 02.2	14.6		Diphda	349 35.7	S 18 12.1			
05	288 57.5	278 08.9	8 59.4	171 36.3	04.1		340 41.9	08.7		347 04.6	14.6							
06	304 00.0	293 11.7 N	8 58.6	186 37.4 N23	03.9		355 44.2	S19 08.7		2 07.0	S20 14.5		Dubhe	194 39.7	N 61 57.8			
07	319 02.5	308 14.5	57.9	201 38.6	03.6		10 46.4	08.6		17 09.4	14.5		Elnath	279 02.7	N 28 34.5			
08	334 04.9	323 17.2	57.1	216 39.7	03.3		25 48.6	08.6		32 11.8	14.5		Eltanin	91 04.2	N 51 29.4			
09	349 07.4	338 20.0	.. 56.3	231 40.9	.. 03.1		40 50.9	.. 08.5		47 14.2	.. 14.5		Enif	34 25.9	N 9 41.7			
10	4 09.9	353 22.8	55.5	246 42.0	02.8		55 53.1	08.5		62 16.6	14.5		Fomalhaut	16 07.7	S 29 49.6			
11	19 12.3	8 25.6	54.8	261 43.2	02.6		70 55.4	08.4		77 19.0	14.5							
12	34 14.8	23 28.3 N	8 54.0	276 44.3 N23	02.3		85 57.6	S19 08.4		92 21.4	S20 14.5		Gacrux	172 44.3	S 56 53.9			
13	49 17.3	38 31.1	53.2	291 45.5	02.0		100 59.8	08.3		107 23.8	14.5		Gienah	176 32.6	S 17 19.7			
14	64 19.7	53 33.8	52.4	306 46.6	01.8		116 02.1	08.3		122 26.2	14.5		Hadar	149 43.2	S 60 11.2			
15	79 22.2	68 36.6	.. 51.7	321 47.8	.. 01.5		131 04.3	.. 08.2		137 28.6	.. 14.5		Hamal	328 45.6	N 23 16.6			
16	94 24.7	83 39.3	50.9	336 48.9	01.2		146 06.5	08.2		152 31.1	14.5		Kaus Aust.	84 35.9	S 34 24.1			
17	109 27.1	98 42.1	50.2	351 50.1	01.0		161 08.8	08.2		167 33.5	14.5							
18	124 29.6	113 44.8 N	8 49.4	6 51.2 N23	00.7		176 11.0	S19 08.1		182 35.9	S20 14.5		Kochab	137 17.2	N 74 18.9			
19	139 32.0	128 47.6	48.6	21 52.4	00.4		191 13.2	08.1		197 38.3	14.4		Markab	14 17.8	N 14 59.6			
20	154 34.5	143 50.3	47.9	36 53.5	23 00.2		206 15.5	08.0		212 40.7	14.4		Menkar	314 56.6	N 3 56.1			
21	169 37.0	158 53.0	.. 47.1	51 54.7	22 59.9		221 17.7	.. 08.0		227 43.1	.. 14.4		Menkent	148 53.7	S 36 10.8			
22	184 39.4	173 55.8	46.4	66 55.8	59.6		236 20.0	07.9		242 45.5	14.4		Miaplacidus	221 47.8	S 69 33.8			
23	199 41.9	188 58.5	45.6	81 56.9	59.4		251 22.2	07.9		257 47.9	14.4							
27																		
00	214 44.4	204 01.2 N	8 44.9	96 58.1 N22	59.1		266 24.4	S19 07.8		272 50.3	S20 14.4		Mirfak	309 37.3	N 49 43.3			
01	229 46.8	219 03.9	44.1	111 59.2	58.8		281 26.7	07.8		287 52.7	14.4		Nunki	76 47.0	S 26 20.6			
02	244 49.3	234 06.6	43.4	127 00.4	58.6		296 28.9	07.7		302 55.1	14.4		Peacock	54 21.3	S 56 51.4			
03	259 51.8	249 09.3	.. 42.6	142 01.5	.. 58.3		311 31.2	.. 07.7		317 57.6	.. 14.4		Pollux	244 16.0	N 28 07.2			
04	274 54.2	264 12.0	41.9	157 02.7	58.0		326 33.4	07.6		333 00.0	14.4		Procyon	245 41.1	N 5 19.3			
05	289 56.7	279 14.7	41.1	172 03.8	57.8		341 35.6	07.6		348 02.4	14.4							
06	304 59.1	294 17.4 N	8 40.4	187 05.0 N22	57.5		356 37.9	S19 07.6		3 04.8	S20 14.4		Rasalhague	96 42.8	N 12 35.2			
07	320 01.6	309 20.1	39.7	202 06.1	57.2		11 40.1	07.5		18 07.2	14.4		Regulus	208 25.3	N 12 09.4			
08	335 04.1	324 22.8	38.9	217 07.3	56.9		26 42.4	07.5		33 09.6	14.3		Rigel	281 50.2	S 8 15.0			
09	350 06.5	339 25.5	.. 38.2	232 08.4	.. 56.7		41 44.6	.. 07.4		48 12.0	.. 14.3		Rigel Kent.	140 44.9	S 60 40.5			
10	5 09.0	354 28.2	37.5	247 09.6	56.4		56 46.8	07.4		63 14.4	14.3		Sabik	102 57.5	S 15 40.6			
11	20 11.5	9 30.8	36.7	262 10.7	56.1		71 49.1	07.3		78 16.8	14.3							
12	35 13.9	24 33.5 N	8 36.0	277 11.8 N22	55.9		86 51.3	S19 07.3		93 19.3	S20 14.3		Schedar	350 26.0	N 56 19.3			
13	50 16.4	39 36.2	35.3	292 13.0	55.6		101 53.6	07.2		108 21.7	14.3		Shaula	97 15.2	S 37 04.5			
14	65 18.9	54 38.8	34.5	307 14.1	55.3		116 55.8	07.2		123 24.1	14.3		Sirius	259 08.7	S 16 40.0			
15	80 21.3	69 41.5	.. 33.8	322 15.3	.. 55.1		131 58.1	.. 07.1		138 26.5	.. 14.3		Spica	159 12.5	S 10 57.6			
16	95 23.8	84 44.1	33.1	337 16.4	54.8		147 00.3	07.1		153 28.9	14.3		Suhail	223 21.4	S 43 16.9			
17	110 26.3	99 46.8	32.4	352 17.6	54.5		162 02.6	07.1		168 31.3	14.3							
18	125 28.7	114 49.4 N	8 31.7	7 18.7 N22	54.2		177 04.8	S19 07.0		183 33.7	S20 14.3		Vega	81 05.5	N 38 44.7			
19	140 31.2	129 52.1	30.9	22 19.9	54.0		192 07.0	07.0		198 36.1	14.3		Zuben'ubi	137 48.8	S 15 52.9			
20	155 33.6	144 54.7	30.2	37 21.0	53.7		207 09.3	06.9		213 38.6	14.							

	ARIES		VENUS -4.0		MARS +1.3		JUPITER -1.9		SATURN +0.8		STARS				
G.M.T.	G.H.A.	G.H.A.	Dec.	G.H.A.	Dec.	G.H.A.	Dec.	G.H.A.	Dec.	G.H.A.	Dec.	Name	S.H.A.	Dec.	
d h	° ' "	° ' "	° ' "	° ' "	° ' "	° ' "	° ' "	° ' "	° ' "	° ' "	° ' "		° ' "	° ' "	
28	00	215 43.5	205 05.2 N	8 27.4	97 25.6	N22 52.6	267 18.3	S19 06.7	273 48.2	S20 14.2		Acamar	315 48.7	S 40 27.8	
	01	230 46.0	220 07.9	26.7	112 26.7	52.3	282 20.5	06.7	288 50.6	14.2		Acchernar	335 56.7	S 57 26.0	
	02	245 48.4	235 10.5	26.0	127 27.9	52.1	297 22.8	06.6	303 53.0	14.2		Acrux	173 52.8	S 62 53.2	
	03	260 50.9	250 13.1	.. 25.3	142 29.0	.. 51.8	312 25.0	.. 06.6	318 55.5	.. 14.2		Adhara	255 43.7	S 28 55.4	
	04	275 53.4	265 15.7	24.6	157 30.1	51.5	327 27.3	06.6	333 57.9	14.2		Aldebaran	291 35.0	N 16 25.8	
05	290 55.8	280 18.3	23.9	172 31.3	51.3	342 29.5	06.5	349 00.3	14.2						
06	305 58.3	295 20.9 N	8 23.2	187 32.4	N22 51.0	357 31.8	S19 06.5	4 02.7	S20 14.2			Alioth	166 54.8	N 56 10.3	
07	321 00.7	310 23.5	22.5	202 33.6	50.7	12 34.0	06.4	19 05.1	14.2			Alkaid	153 29.5	N 49 30.4	
08	336 03.2	325 26.1	21.8	217 34.7	50.4	27 36.3	06.4	34 07.5	14.2			Al Na'ir	28 33.4	S 47 08.8	
09	351 05.7	340 28.7	.. 21.1	232 35.8	.. 50.2	42 38.5	.. 06.3	49 09.9	.. 14.2			Alnilam	276 26.6	S 1 13.8	
F R I	10	6 08.1	355 31.3	20.4	247 37.0	49.9	57 40.8	06.3	64 12.4	14.2		Alphard	218 34.8	S 8 29.6	
	11	21 10.6	10 33.9	19.7	262 38.1	49.6	72 43.0	06.2	79 14.8	14.2					
	12	36 13.1	25 36.4 N	8 19.0	277 39.3	N22 49.3	87 45.3	S19 06.2	94 17.2	S20 14.2		Alphecca	126 44.1	N 26 50.6	
	13	51 15.5	40 39.0	18.4	292 40.4	49.1	102 47.5	06.2	109 19.6	14.2		Alpheratz	358 24.6	N 28 52.4	
	14	66 18.0	55 41.6	17.7	307 41.5	48.8	117 49.8	06.1	124 22.0	14.2		Altair	62 46.6	N 8 45.8	
D A Y	15	81 20.5	70 44.2	.. 17.0	322 42.7	.. 48.5	132 52.0	.. 06.1	139 24.4	.. 14.1		Ankaa	353 55.0	S 42 31.0	
	16	96 22.9	85 46.7	16.3	337 43.8	48.2	147 54.3	06.0	154 26.9	14.1		Antares	113 14.3	S 26 20.7	
	17	111 25.4	100 49.3	15.6	352 45.0	48.0	162 56.5	06.0	169 29.3	14.1					
	18	126 27.9	115 51.8 N	8 15.0	7 46.1	N22 47.7	177 58.8	S19 05.9	184 31.7	S20 14.1		Arcturus	146 31.4	N 19 23.0	
	19	141 30.3	130 54.4	14.3	22 47.2	47.4	193 01.0	05.9	199 34.1	14.1		Atria	108 51.1	S 68 57.3	
20	156 32.8	145 56.9	13.6	37 48.4	47.1	208 03.3	05.8	214 36.5	14.1		Avior	234 34.2	S 59 23.5		
21	171 35.2	160 59.5	.. 13.0	52 49.5	.. 46.9	223 05.5	.. 05.8	229 38.9	.. 14.1		Bellatrix	279 14.6	N 6 18.7		
22	186 37.7	176 02.0	12.3	67 50.7	46.6	238 07.8	05.8	244 41.4	14.1		Betelgeuse	271 44.2	N 7 23.9		
23	201 40.2	191 04.5	11.6	82 51.8	46.3	253 10.0	05.7	259 43.8	14.1						
29	00	216 42.6	206 07.1 N	8 11.0	97 52.9	N22 46.0	268 12.3	S19 05.7	274 46.2	S20 14.1		Canopus	264 14.0	S 52 40.8	
	01	231 45.1	221 09.6	10.3	112 54.1	45.8	283 14.5	05.6	289 48.6	14.1		Capella	281 33.1	N 45 57.6	
	02	246 47.6	236 12.1	09.6	127 55.2	45.5	298 16.8	05.6	304 51.0	14.1		Deneb	49 58.3	N 45 08.2	
	03	261 50.0	251 14.7	.. 09.0	142 56.4	.. 45.2	313 19.0	.. 05.5	319 53.4	.. 14.1		Denebola	183 13.6	N 14 47.3	
	04	276 52.5	266 17.2	08.3	157 57.5	44.9	328 21.3	05.5	334 55.9	14.1		Diphda	349 35.7	S 18 12.0	
05	291 55.0	281 19.7	07.7	172 58.6	44.6	343 23.5	05.5	349 58.3	14.1						
06	306 57.4	296 22.2 N	8 07.0	187 59.8	N22 44.4	358 25.8	S19 05.4	5 00.7	S20 14.1			Dubhe	194 39.7	N 61 57.8	
07	321 59.9	311 24.7	06.4	203 00.9	44.1	13 28.1	05.4	20 03.1	14.1		Elnath	279 02.8	N 28 34.5		
08	337 02.3	326 27.2	05.7	218 02.1	43.8	28 30.3	05.3	35 05.5	14.0		Eltanin	91 04.1	N 51 29.4		
09	352 04.8	341 29.7	.. 05.1	233 03.2	.. 43.5	43 32.6	.. 05.3	50 08.0	.. 14.0		Enif	34 25.9	N 9 41.7		
S A T	10	7 07.3	356 32.2	04.4	248 04.3	43.2	58 34.8	05.2	65 10.4	14.0		Fomalhaut	16 07.7	S 29 49.6	
	11	22 09.7	11 34.7	03.8	263 05.5	43.0	73 37.1	05.2	80 12.8	14.0					
	12	37 12.2	26 37.2 N	8 03.2	278 06.6	N22 42.7	88 39.3	S19 05.2	95 15.2	S20 14.0		Gacrux	172 44.3	S 56 53.9	
	13	52 14.7	41 39.6	02.5	293 07.7	42.4	103 41.6	05.1	110 17.6	14.0		Gienah	176 32.6	S 17 19.7	
	14	67 17.1	56 42.1	01.9	308 08.9	42.1	118 43.9	05.1	125 20.1	14.0		Hadar	149 43.2	S 60 11.2	
U R D A Y	15	82 19.6	71 44.6	.. 01.2	323 10.0	.. 41.8	133 46.1	.. 05.0	140 22.5	.. 14.0		Hamal	328 45.6	N 23 16.6	
	16	97 22.1	86 47.1	00.6	338 11.2	41.6	148 48.4	05.0	155 24.9	14.0		Kaus Aust.	84 35.9	S 34 24.1	
	17	112 24.5	101 49.5	8 00.0	353 12.3	41.3	163 50.6	05.0	170 27.3	14.0					
	18	127 27.0	116 52.0 N	7 59.3	8 13.4	N22 41.0	178 52.9	S19 04.9	185 29.7	S20 14.0		Kochab	137 17.2	N 74 18.9	
	19	142 29.5	131 54.5	58.7	23 14.6	40.7	193 55.2	04.9	200 32.2	14.0		Markab	14 17.8	N 14 59.6	
20	157 31.9	146 56.9	58.1	38 15.7	40.4	208 57.4	04.8	215 34.6	14.0		Menkar	314 56.6	N 3 56.1		
21	172 34.4	161 59.4	.. 57.5	53 16.8	.. 40.2	223 59.7	.. 04.8	230 37.0	.. 14.0		Menkent	148 53.7	S 36 10.8		
22	187 36.8	177 01.8	56.9	68 18.0	39.9	239 01.9	04.7	245 39.4	14.0		Miaplacidus	221 47.9	S 69 33.8		
23	202 39.3	192 04.3	56.2	83 19.1	39.6	254 04.2	04.7	260 41.9	14.0						
30	00	217 41.8	207 06.7 N	7 55.6	98 20.2	N22 39.3	269 06.5	S19 04.7	275 44.3	S20 14.0		Mirfak	309 37.3	N 49 43.3	
	01	232 44.2	222 09.1	55.0	113 21.4	39.0	284 08.7	04.6	290 46.7	14.0		Nunki	76 47.0	S 26 20.6	
	02	247 46.7	237 11.6	54.4	128 22.5	38.7	299 11.0	04.6	305 49.1	14.0		Peacock	54 21.3	S 56 51.4	
	03	262 49.2	252 14.0	.. 53.8	143 23.6	.. 38.5	314 13.2	.. 04.5	320 51.5	.. 14.0		Pollux	244 16.0	N 28 07.2	
	04	277 51.6	267 16.4	53.2	158 24.8	38.2	329 15.5	04.5	335 54.0	13.9		Procyon	245 41.1	N 5 19.3	
05	292 54.1	282 18.9	52.6	173 25.9	37.9	344 17.8	04.5	350 56.4	13.9						
06	307 56.6	297 21.3 N	7 51.9	188 27.1	N22 37.6	359 20.0	S19 04.4	5 58.8	S20 13.9			Rasalhague	96 42.8	N 12 35.2	
07	322 59.0	312 23.7	51.3	203 28.2	37.3	14 22.3	04.4	21 01.2	13.9		Regulus	208 25.3	N 12 09.4		
08	338 01.5	327 26.1	50.7	218 29.3	37.1	29 24.6	04.3	36 03.7	13.9		Rigel	281 50.2	S 8 15.0		
09	353 04.0	342 28.5	.. 50.1	233 30.5	.. 36.8	44 26.8	.. 04.3	51 06.1	.. 13.9		Rigel Kent.	140 44.9	S 60 40.5		
S U N	10	8 06.4	357 30.9	49.5	248 31.6	36.5	59 29.1	04.2	66 08.5	13.9		Sabik	102 57.5	S 15 40.6	
	11	23 08.9	12 33.3	48.9	263 32.7	36.2	74 31.3	04.2	81 10.9	13.9					
	12	38 11.3	27 35.7 N	7 48.4	278 33.9	N22 35.9	89 33.6	S19 04.2	96 13.4	S20 13.9		Schedar	350 26.0	N 56 19.2	
	13	53 13.8	42 38.1	47.8	293 35.0	35.6	104 35.9	04.1	111 15.8	13.9		Shaula	97 15.2	S 37 04.5	
	14	68 16.3	57 40.5	47.2	308 36.1	35.3	119 38.1	04.1	126 18.2	13.9		Sirius	259 08.7	S 16 40.0	
15	83 18.7	72 42.9	.. 46.6	323 37.3	.. 35.1	134 40.4	.. 04.0	141 20.6	.. 13.9		Spica	159 12.5	S 10 57.6		
16	98 21.2	87 45.2	46.0	338 38.4	34.8	149 42.7	04.0	156 23.0	13.9		Suhail	223 21.4	S 43 16.9		
17	113 23.7	102 47.6	45.4	353 39.5	34.5	164 44.9	04.0	171 25.5	13.9						
18	128 26.1	117 50.0 N	7 44.8	8 40.7	N22 34.2	179 47.2	S19 03.9	186 27.9	S20 13.9			Vega	81 05.4	N 38 44.7	
19	143 28.6	132 52.3	44.2	23 41.8	33.9	194 49.5	03.9	201 30.3	13.9		Zuben'ubi	137 48.8	S 15 52.9		
20	158 31.1	147 54.7	43.7	38 42.9	33.6	209 51.7	03.8	216 32.7	13.9						
21	173 33.5	162 57.1	.. 43.1	53 44.0	.. 33.4	224 54.0	.. 03.8	231 35.2	.. 13.9				S.H.A.	Mer. Pass.	
22	188 36.0	177 59.4	42.5	68 45.2	33.1	239 56.3	03.8	246 37.6	13.9		Venus	349 24.5	0 10 14		
23	203 38.4	193 01.8	41.9	83 46.3	32.8	254 58.5	03.7	261 40.0	13.9		Mars	241 10.3	17 27		
											Jupiter	51 29.7	6 06		
											Saturn	58 03.6	5 40		
Mer. Pass.	9 31.6	v 2.5	d 0.6	v 1.1	d 0.3	v 2.3	d 0.0	v 2.4	d 0.0						

G.M.T.	SUN				MOON				Lat.	Twilight		Sun-rise	Moonrise				
	G.H.A.		Dec.	H.P.	G.H.A.		Dec.	H.P.		Naut.	Civil		28	29	30	I	
	d	h			d	h											
F R I D A Y	00	180 36.6	N14 00.3	31 09.8	13.5	N	0 45.4	10.3	55.8	N 72	///	///	02 10	16 55	18 40	20 32	22 33
	01	195 36.7	01.1	45 42.3	13.6		0 35.1	10.3	55.9	N 70	///	///	02 44	16 51	18 30	20 13	22 01
	02	210 36.8	01.9	60 14.9	13.5		0 24.8	10.3	55.9	68	///	01 29	03 08	16 49	18 22	19 59	21 37
	03	225 36.9	02.7	74 47.4	13.5		0 14.5	10.3	55.9	66	///	02 09	03 26	16 47	18 15	19 47	21 19
	04	240 37.0	03.5	89 19.9	13.5	N	0 04.2	10.3	55.9	64	///	02 35	03 41	16 45	18 09	19 37	21 05
	05	255 37.1	04.3	103 52.4	13.4	S	0 06.1	10.3	56.0	62	01 18	02 56	03 54	16 43	18 05	19 28	20 53
	06	270 37.2	N14 05.1	118 24.8	13.4	S	0 16.4	10.4	56.0	60	01 54	03 12	04 04	16 42	18 00	19 21	20 42
	07	285 37.3	05.8	132 57.2	13.4		0 26.8	10.3	56.0	N 58	02 19	03 26	04 13	16 40	17 57	19 15	20 33
	08	300 37.4	06.6	147 29.6	13.4		0 37.1	10.4	56.0	56	02 38	03 38	04 21	16 39	17 53	19 09	20 25
	09	315 37.5	07.4	162 02.0	13.3		0 47.5	10.3	56.1	54	02 54	03 48	04 28	16 38	17 50	19 04	20 18
	10	330 37.6	08.2	176 34.3	13.3		0 57.8	10.4	56.1	52	03 07	03 56	04 35	16 37	17 48	19 00	20 12
	11	345 37.7	09.0	191 06.6	13.2		1 08.2	10.4	56.1	50	03 18	04 04	04 41	16 37	17 45	18 56	20 07
	12	0 37.8	N14 09.8	205 38.8	13.2	S	1 18.6	10.3	56.1	45	03 41	04 21	04 53	16 35	17 40	18 47	19 55
	13	15 37.8	10.6	220 11.0	13.2		1 28.9	10.4	56.2	N 40	03 59	04 34	05 03	16 33	17 35	18 39	19 44
	14	30 37.9	11.3	234 43.2	13.2		1 39.3	10.4	56.2	35	04 13	04 45	05 12	16 32	17 32	18 33	19 36
	15	45 38.0	12.1	249 15.4	13.1		1 49.7	10.4	56.2	30	04 24	04 54	05 19	16 31	17 29	18 28	19 29
	16	60 38.1	12.9	263 47.5	13.0		2 00.1	10.4	56.3	20	04 42	05 09	05 32	16 29	17 23	18 18	19 16
	17	75 38.2	13.7	278 19.5	13.1		2 10.5	10.4	56.3	N 10	04 56	05 22	05 44	16 28	17 18	18 10	19 05
	18	90 38.3	N14 14.5	292 51.6	13.0	S	2 20.9	10.4	56.3	0	05 08	05 33	05 54	16 26	17 13	18 02	18 54
	19	105 38.4	15.3	307 23.6	12.9		2 31.3	10.3	56.3	S 10	05 18	05 43	06 04	16 25	17 08	17 55	18 44
	20	120 38.5	16.0	321 55.5	12.9		2 41.6	10.4	56.4	20	05 26	05 52	06 15	16 23	17 04	17 46	18 33
	21	135 38.6	16.8	336 27.4	12.9		2 52.0	10.4	56.4	30	05 34	06 03	06 27	16 21	16 58	17 37	18 20
	22	150 38.7	17.6	350 59.3	12.9		3 02.4	10.4	56.4	35	05 39	06 08	06 35	16 20	16 55	17 32	18 13
23	165 38.8	18.4	5 31.2	12.8		3 12.8	10.4	56.4	40	05 43	06 15	06 43	16 19	16 51	17 26	18 05	
29 00	180 38.9	N14 19.2	20 03.0	12.7	S	3 23.2	10.3	56.5	45	05 47	06 21	06 52	16 18	16 47	17 19	17 55	
S A T U R D A Y	01	195 39.0	20.0	34 34.7	12.7		3 33.5	10.4	56.5	S 50	05 51	06 29	07 03	16 16	16 42	17 11	17 44
	02	210 39.1	20.7	49 06.4	12.7		3 43.9	10.3	56.5	52	05 53	06 33	07 08	16 15	16 40	17 07	17 39
	03	225 39.1	21.5	63 38.1	12.6		3 54.2	10.4	56.5	54	05 55	06 37	07 14	16 15	16 38	17 03	17 33
	04	240 39.2	22.3	78 09.7	12.6		4 04.6	10.3	56.6	56	05 57	06 41	07 21	16 14	16 35	16 59	17 26
	05	255 39.3	23.1	92 41.3	12.5		4 14.9	10.4	56.6	58	05 59	06 45	07 28	16 13	16 32	16 54	17 19
	06	270 39.4	N14 23.8	107 12.8	12.5	S	4 25.3	10.3	56.6	S 60	06 01	06 50	07 36	16 12	16 29	16 48	17 11
	07	285 39.5	24.6	121 44.3	12.5		4 35.6	10.3	56.7	Lat.	Sun-set	Twilight	Moonset				
	08	300 39.6	25.4	136 15.8	12.4		4 45.9	10.3	56.7			Civil	Naut.	28	29	30	I
	09	315 39.7	26.2	150 47.2	12.4		4 56.2	10.3	56.7								
	10	330 39.8	27.0	165 18.6	12.3		5 06.5	10.2	56.7								
	11	345 39.9	27.7	179 49.9	12.2		5 16.7	10.3	56.8								
	12	0 39.9	N14 28.5	194 21.1	12.2	S	5 27.0	10.2	56.8	N 72	21 51	///	///	04 02	03 55	03 47	03 38
	13	15 40.0	29.3	208 52.3	12.2		5 37.2	10.2	56.8	N 70	21 15	///	///	04 02	04 01	04 00	03 59
	14	30 40.1	30.1	223 23.5	12.1		5 47.4	10.2	56.8	68	20 50	22 34	///	04 02	04 05	04 09	04 15
	15	45 40.2	30.8	237 54.6	12.1		5 57.6	10.2	56.9	66	20 31	21 51	///	04 02	04 09	04 17	04 28
	16	60 40.3	31.6	252 25.7	12.0		6 07.8	10.2	56.9	64	20 16	21 23	///	04 02	04 13	04 24	04 39
	17	75 40.4	32.4	266 56.7	12.0		6 18.0	10.1	56.9	62	20 03	21 02	22 43	04 02	04 16	04 30	04 48
	18	90 40.5	N14 33.2	281 27.7	11.9	S	6 28.1	10.1	56.9	60	19 52	20 45	22 05	04 02	04 18	04 36	04 56
	19	105 40.6	33.9	295 58.6	11.8		6 38.2	10.1	57.0	N 58	19 43	20 31	21 39	04 02	04 20	04 40	05 03
	20	120 40.7	34.7	310 29.4	11.9		6 48.3	10.1	57.0	56	19 35	20 19	21 19	04 02	04 22	04 44	05 10
	21	135 40.7	35.5	325 00.3	11.7		6 58.4	10.0	57.0	54	19 28	20 09	21 03	04 02	04 24	04 48	05 15
	22	150 40.8	36.2	339 31.0	11.7		7 08.4	10.0	57.0	52	19 21	20 00	20 50	04 02	04 26	04 52	05 20
	23	165 40.9	37.0	354 01.7	11.7		7 18.4	10.0	57.1	50	19 15	19 52	20 38	04 02	04 27	04 55	05 25
30 00	180 41.0	N14 37.8	8 32.4	11.6	S	7 28.4	10.0	57.1	45	19 03	19 35	20 15	04 02	04 31	05 01	05 35	
S U N D A Y	01	195 41.1	38.6	23 03.0	11.5		7 38.4	9.9	57.1	N 40	18 52	19 22	19 57	04 02	04 34	05 07	05 43
	02	210 41.2	39.3	37 33.5	11.5		7 48.3	9.9	57.2	35	18 43	19 11	19 43	04 02	04 36	05 12	05 51
	03	225 41.3	40.1	52 04.0	11.4		7 58.2	9.9	57.2	30	18 36	19 01	19 31	04 02	04 38	05 16	05 57
	04	240 41.3	40.9	66 34.4	11.4		8 08.1	9.8	57.2	20	18 23	18 46	19 13	04 02	04 42	05 24	06 08
	05	255 41.4	41.6	81 04.8	11.3		8 17.9	9.8	57.2	N 10	18 11	18 33	18 59	04 02	04 45	05 30	06 18
	06	270 41.5	N14 42.4	95 35.1	11.3	S	8 27.7	9.8	57.3	0	18 01	18 22	18 47	04 02	04 48	05 36	06 27
	07	285 41.6	43.2	110 05.4	11.2		8 37.5	9.7	57.3	S 10	17 50	18 12	18 37	04 02	04 52	05 43	06 36
	08	300 41.7	43.9	124 35.6	11.1		8 47.2	9.7	57.3	20	17 39	18 02	18 28	04 02	04 55	05 49	06 46
	09	315 41.8	44.7	139 05.7	11.1		8 56.9	9.7	57.3	30	17 27	17 52	18 20	04 02	04 59	05 57	06 57
	10	330 41.8	45.5	153 35.8	11.0		9 06.6	9.6	57.4	35	17 20	17 46	18 16	04 02	05 01	06 01	07 03
	11	345 41.9	46.2	168 05.8	11.0		9 16.2	9.6	57.4	40	17 12	17 40	18 12	04 02	05 03	06 06	07 10
	12	0 42.0	N14 47.0	182 35.8	10.9	S	9 25.8	9.5	57.4	45	17 02	17 33	18 07	04 02	05 06	06 12	07 19
	13	15 42.1	47.8	197 05.7	10.9		9 35.3	9.5	57.4	S 50	16 51	17 25	18 03	04 02	05 09	06 18	07 29
	14	30 42.2	48.5	211 35.6	10.8		9 44.8	9.5	57.5	52	16 46	17 21	18 01	04 02	05 11	06 22	07 34
	15	45 42.3	49.3	226 05.4	10.7		9 54.3	9.4	57.5	54	16 40	17 17	17 59	04 02			



		ARIES		VENUS -4.1		MARS +1.3		JUPITER -1.9		SATURN +0.8		STARS														
G.M.T.		G.H.A.		G.H.A. Dec.		G.H.A. Dec.		G.H.A. Dec.		G.H.A. Dec.		Name	S.H.A.	Dec.												
d	h	°	'	°	'	°	'	°	'	°	'		°	'												
MONDAY	00	218	40.9	208	04.1 N	7	41.4	98	47.4	N22	32.5	270	00.8	S19	03.7	276	42.5	S20	13.9	Acamar	315	48.7	S	40	27.7	
	01	233	43.4	223	06.5		40.8	113	48.6		32.2	285	03.1		03.6	291	44.9		13.9	Achernar	335	56.7	S	57	26.0	
	02	248	45.8	238	08.8		40.2	128	49.7		31.9	300	05.3		03.6	306	47.3		13.9	Acrux	173	52.8	S	62	53.3	
	03	263	48.3	253	11.2	..	39.7	143	50.8	..	31.6	315	07.6	..	03.6	321	49.7	..	13.9	Adhara	255	43.7	S	28	55.4	
	04	278	50.8	268	13.5		39.1	158	52.0		31.3	330	09.9		03.5	336	52.2		13.8	Aldebaran	291	35.0	N	16	25.8	
	05	293	53.2	283	15.8		38.5	173	53.1		31.1	345	12.1		03.5	351	54.6		13.8							
	06	308	55.7	298	18.2 N	7	38.0	188	54.2	N22	30.8	0	14.4	S19	03.4	6	57.0	S20	13.8	Alioth	166	54.8	N	56	10.3	
	07	323	58.2	313	20.5		37.4	203	55.4		30.5	15	16.7		03.4	21	59.4		13.8	Alkaid	153	29.5	N	49	30.5	
	08	339	00.6	328	22.8		36.9	218	56.5		30.2	30	18.9		03.4	37	01.9		13.8	Al Na'ir	28	33.4	S	47	08.1	
	09	354	03.1	343	25.1	..	36.3	233	57.6	..	29.9	45	21.2	..	03.3	52	04.3	..	13.8	Alnilam	276	26.6	S	1	13.8	
	10	9	05.6	358	27.4		35.8	248	58.8		29.6	60	23.5		03.3	67	06.7		13.8	Alphard	218	34.8	S	8	29.6	
	11	24	08.0	13	29.7		35.2	263	59.9		29.3	75	25.8		03.2	82	09.2		13.8							
	12	39	10.5	28	32.0 N	7	34.7	279	01.0	N22	29.0	90	28.0	S19	03.2	97	11.6	S20	13.8	Alphecca	126	44.1	N	26	50.7	
	13	54	12.9	43	34.3		34.1	294	02.1		28.7	105	30.3		03.2	112	14.0		13.8	Alpheratz	358	24.6	N	28	52.4	
	14	69	15.4	58	36.6		33.6	309	03.3		28.5	120	32.6		03.1	127	16.4		13.8	Altair	62	46.6	N	8	45.8	
	15	84	17.9	73	38.9	..	33.0	324	04.4	..	28.2	135	34.9	..	03.1	142	18.9	..	13.8	Ankaa	353	55.0	S	42	30.9	
	16	99	20.3	88	41.2		32.5	339	05.5		27.9	150	37.1		03.1	157	21.3		13.8	Antares	113	14.3	S	26	20.8	
	17	114	22.8	103	43.5		31.9	354	06.7		27.6	165	39.4		03.0	172	23.7		13.8							
	18	129	25.3	118	45.8 N	7	31.4	9	07.8	N22	27.3	180	41.7	S19	03.0	187	26.2	S20	13.8	Arcturus	146	31.4	N	19	23.0	
	19	144	27.7	133	48.1		30.9	24	08.9		27.0	195	43.9		02.9	202	28.6		13.8	Atria	108	51.1	S	68	57.3	
	20	159	30.2	148	50.3		30.3	39	10.1		26.7	210	46.2		02.9	217	31.0		13.8	Avior	234	34.2	S	59	23.5	
	21	174	32.7	163	52.6	..	29.8	54	11.2	..	26.4	225	48.5	..	02.9	232	33.4	..	13.8	Bellatrix	279	14.6	N	6	18.7	
	22	189	35.1	178	54.9		29.3	69	12.3		26.1	240	50.8		02.8	247	35.9		13.8	Betelgeuse	271	44.2	N	7	23.9	
	23	204	37.6	193	57.1		28.7	84	13.4		25.8	255	53.0		02.8	262	38.3		13.8							
TUESDAY	00	219	40.1	208	59.4 N	7	28.2	99	14.6	N22	25.5	270	55.3	S19	02.7	277	40.7	S20	13.8	Canopus	264	14.0	S	52	40.8	
	01	234	42.5	224	01.7		27.7	114	15.7		25.3	285	57.6		02.7	292	43.2		13.8	Capella	281	33.1	N	45	57.6	
	02	249	45.0	239	03.9		27.2	129	16.8		25.0	300	59.9		02.7	307	45.6		13.8	Deneb	49	58.3	N	45	08.2	
	03	264	47.4	254	06.2	..	26.7	144	18.0	..	24.7	316	02.1	..	02.6	322	48.0	..	13.8	Denebola	183	13.6	N	14	47.3	
	04	279	49.9	269	08.4		26.1	159	19.1		24.4	331	04.4		02.6	337	50.5		13.8	Diphda	349	35.7	S	18	12.0	
	05	294	52.4	284	10.7		25.6	174	20.2		24.1	346	06.7		02.6	352	52.9		13.8							
	06	309	54.8	299	12.9 N	7	25.1	189	21.3	N22	23.8	1	09.0	S19	02.5	7	55.3	S20	13.8	Dubhe	194	39.7	N	61	57.8	
	07	324	57.3	314	15.1		24.6	204	22.5		23.5	16	11.3		02.5	22	57.8		13.7	Elath	279	02.8	N	28	34.5	
	08	339	59.8	329	17.4		24.1	219	23.6		23.2	31	13.5		02.4	38	00.2		13.7	Eltanin	91	04.1	N	51	29.5	
	09	355	02.2	344	19.6	..	23.6	234	24.7	..	22.9	46	15.8	..	02.4	53	02.6	..	13.7	Enif	34	25.9	N	9	41.7	
	10	10	04.7	359	21.8		23.1	249	25.9		22.6	61	18.1		02.4	68	05.1		13.7	Fomalhaut	16	07.6	S	29	49.6	
	11	25	07.2	14	24.0		22.6	264	27.0		22.3	76	20.4		02.3	83	07.5		13.7							
	12	40	09.6	29	26.2 N	7	22.1	279	28.1	N22	22.0	91	22.6	S19	02.3	98	09.9	S20	13.7	Gacrux	172	44.3	S	56	54.0	
	13	55	12.1	44	28.5		21.6	294	29.2		21.7	106	24.9		02.3	113	12.4		13.7	Gienah	176	32.6	S	17	19.7	
	14	70	14.5	59	30.7		21.1	309	30.4		21.4	121	27.2		02.2	128	14.8		13.7	Hadar	149	43.2	S	60	11.2	
	15	85	17.0	74	32.9	..	20.6	324	31.5	..	21.2	136	29.5	..	02.2	143	17.2	..	13.7	Hamal	328	45.6	N	23	16.6	
	16	100	19.5	89	35.1		20.1	339	32.6		20.9	151	31.8		02.2	158	19.7		13.7	Kaus Aust.	84	35.9	S	34	24.1	
	17	115	21.9	104	37.3		19.6	354	33.7		20.6	166	34.0		02.1	173	22.1		13.7							
	18	130	24.4	119	39.5 N	7	19.1	9	34.9	N22	20.3	181	36.3	S19	02.1	188	24.5	S20	13.7	Kochab	137	17.2	N	74	18.9	
	19	145	26.9	134	41.7		18.6	24	36.0		20.0	196	38.6		02.0	203	27.0		13.7	Markab	14	17.8	N	14	59.6	
	20	160	29.3	149	43.8		18.1	39	37.1		19.7	211	40.9		02.0	218	29.4		13.7	Menkar	314	56.6	N	3	56.1	
	21	175	31.8	164	46.0	..	17.7	54	38.2	..	19.4	226	43.2	..	02.0	233	31.8	..	13.7	Menkent	148	53.7	S	36	10.8	
	22	190	34.3	179	48.2		17.2	69	39.4		19.1	241	45.5		01.9	248	34.3		13.7	Miaplacidus	221	47.9	S	69	33.8	
	23	205	36.7	194	50.4		16.7	84	40.5		18.8	256	47.7		01.9	263	36.7		13.7							
WEDNESDAY	00	220	39.2	209	52.6 N	7	16.2	99	41.6	N22	18.5	271	50.0	S19	01.9	278	39.1	S20	13.7	Mirfak	309	37.3	N	49	43.3	
	01	235	41.7	224	54.7		15.7	114	42.7		18.2	286	52.3		01.8	293	41.6		13.7	Nunki	76	47.0	S	26	20.6	
	02	250	44.1	239	56.9		15.3	129	43.9		17.9	301	54.6		01.8	308	44.0		13.7	Peacock	54	21.3	S	56	51.4	
	03	265	46.6	254	59.1	..	14.8	144	45.0	..	17.6	316	56.9	..	01.8	323	46.4	..	13.7	Pollux	244	16.0	N	28	07.2	
	04	280	49.0	270	01.2		14.3	159	46.1		17.3	331	59.1		01.7	338	48.9		13.7	Procyon	245	41.1	N	5	19.4	
	05	295	51.5	285	03.4		13.9	174	47.2		17.0	347	01.4		01.7	353	51.3		13.7							
	06	310	54.0	300	05.5 N	7	13.4	189	48.4	N22	16.7	2	03.7	S19	01.6	8	53.7	S20	13.7	Rasalhague	96	42.8	N	12	35.2	
	07	325	56.4	315	07.7		12.9	204	49.5		16.4	17	06.0		01.6	23	56.2		13.7	Regulus	208	25.4	N	12	09.4	
	08	340	58.9	330	09.8		12.5	219	50.6		16.1	32	08.3		01.6	38	58.6		13.7	Rigel	281	50.2	S	8	15.0	
	09	356	01.4	345	12.0	..	12.0	234	51.7	..	15.8	47	10.6	..	01.5	54	01.0	..	13.7	Rigel Kent.	140	44.9	S	60	40.5	
	10	11	03.8	0	14.1		11.5	249	52.9		15.5	62	12.9		01.5	69	03.5		13.7	Sabik	102	57.5	S	15	40.6	
	11	26	06.3	15	16.2		11.1	264	54.0		15.2	77	15.1		01.5	84	05.9		13.7							
	12	41	08.8	30	18.4 N	7	10.6	279	55.1	N22	14.9	92	17.4	S19	01.4	99	08.4	S20	13.7	Schedar	350	25.9	N	56	19.2	
	13	56	11.2	45	20.5		10.2	294	56.2		14.6	107	19.7		01.4	114	10.8		13.7	Shaula	97	15.2	S	37	04.5	
	14	71	13.7	60	22.6		09.7	309	57.4		14.3	122	22.0		01.4	129	13.2		13.7	Sirius	259	08.7	S	1		

G.M.T.	SUN				MOON				Lat.	Twilight		Sun-rise	Moonrise				
	G.H.A.		Dec.	H.P.	G.H.A.	v	Dec.	d		Naut.	Civil		1	2	3	4	
	d	h															m
MONDAY	00	180	43.0	N14 56.2	356	30.8	10.1	S11 17.3	8.9	57.7	N 72	01 46	22 33	24 55	00 55	■	
	01	195	43.1	56.9	10 59.9	10.2	11 26.2	8.9	57.7	N 70	01 46	22 33	24 55	00 55	■		
	02	210	43.2	57.7	25 29.1	10.0	11 35.1	8.9	57.8	68	00 58	02 54	21 37	23 15	24 44	00 44	
	03	225	43.2	58.5	39 58.1	10.0	11 44.0	8.8	57.8	66	01 51	03 14	21 19	22 50	24 12	00 12	
	04	240	43.3	14 59.2	54 27.1	9.9	11 52.8	8.7	57.8	64	02 22	03 31	21 05	22 31	23 48	24 52	
	05	255	43.4	15 00.0	68 56.0	9.9	12 01.5	8.7	57.8	62	00 51	02 44	03 45	20 53	22 15	23 30	
	06	270	43.5	N15 00.7	83 24.9	9.8	S12 10.2	8.6	57.9	60	01 38	03 02	03 56	20 42	22 02	23 14	
	07	285	43.6	01.5	97 53.7	9.8	12 18.8	8.6	57.9	N 58	02 07	03 17	04 06	20 33	21 50	23 01	
	08	300	43.6	02.2	112 22.5	9.6	12 27.4	8.5	57.9	56	02 28	03 30	04 14	20 25	21 40	22 50	
	09	315	43.7	03.0	126 51.1	9.6	12 35.9	8.4	57.9	54	02 45	03 41	04 22	20 18	21 31	22 40	
	10	330	43.8	03.8	141 19.7	9.6	12 44.3	8.4	57.9	52	02 59	03 50	04 29	20 12	21 24	22 31	
	11	345	43.9	04.5	155 48.3	9.5	12 52.7	8.3	58.0	50	03 11	03 58	04 35	20 07	21 17	22 24	
	12	0 43.9	N15 05.3	170 16.8	9.4	S13 01.0	8.2	58.0	45	03 36	04 16	04 48	19 55	21 02	22 07	23 07	
	13	15 44.0	06.0	184 45.2	9.4	13 09.2	8.2	58.0	N 40	03 54	04 30	04 59	19 44	20 50	21 53	22 53	
	14	30 44.1	06.8	199 13.6	9.3	13 17.4	8.1	58.0	35	04 09	04 41	05 09	19 36	20 39	21 42	22 41	
	15	45 44.2	07.5	213 41.9	9.2	13 25.5	8.0	58.1	30	04 21	04 51	05 17	19 29	20 31	21 32	22 31	
	16	60 44.3	08.3	228 10.1	9.2	13 33.5	8.0	58.1	20	04 40	05 07	05 30	19 16	20 15	21 14	22 13	
	17	75 44.3	09.0	242 38.3	9.1	13 41.5	7.8	58.1	N 10	04 55	05 21	05 42	19 05	20 01	20 59	21 58	
	18	90 44.4	N15 09.8	257 06.4	9.0	S13 49.3	7.9	58.1	0	05 07	05 32	05 54	18 54	19 48	20 45	21 43	
	19	105 44.5	10.6	271 34.4	9.0	13 57.2	7.7	58.1	S 10	05 18	05 43	06 05	18 44	19 36	20 31	21 28	
	20	120 44.6	11.3	286 02.4	8.9	14 04.9	7.6	58.2	20	05 27	05 53	06 16	18 33	19 22	20 16	21 13	
	21	135 44.6	12.1	300 30.3	8.9	14 12.5	7.6	58.2	30	05 36	06 05	06 29	18 20	19 07	19 59	20 55	
	22	150 44.7	12.8	314 58.2	8.8	14 20.1	7.5	58.2	35	05 41	06 11	06 37	18 13	18 58	19 49	20 45	
	23	165 44.8	13.6	329 26.0	8.7	14 27.6	7.4	58.2	40	05 45	06 17	06 46	18 05	18 48	19 38	20 33	
2	00	180	44.9	N15 14.3	343	53.7	8.7	S14 35.0	7.4	58.2	S 50	05 55	06 33	07 08	17 44	18 22	
01	195	44.9	15.1	358 21.4	8.6	14 42.4	7.2	58.3	52	05 57	06 37	07 13	17 39	18 16	19 01	19 54	
02	210	45.0	15.8	12 49.0	8.6	14 49.6	7.2	58.3	54	05 59	06 41	07 19	17 33	18 08	18 52	19 45	
03	225	45.1	16.6	27 16.6	8.5	14 56.8	7.1	58.3	56	06 02	06 46	07 26	17 26	18 00	18 43	19 35	
04	240	45.2	17.3	41 44.1	8.4	15 03.9	7.0	58.3	58	06 04	06 51	07 34	17 19	17 51	18 32	19 24	
05	255	45.2	18.1	56 11.5	8.3	15 10.9	7.0	58.4	S 60	06 07	06 57	07 43	17 11	17 41	18 20	19 11	
06	270	45.3	N15 18.8	70 38.8	8.4	S15 17.9	6.8	58.4	Lat.	Sun-set	Twilight		Moonset				
07	285	45.4	19.5	85 06.2	8.2	15 24.7	6.7	58.4			Civil	Naut.	1	2	3	4	
08	300	45.5	20.3	99 33.4	8.2	15 31.4	6.7	58.4	o	h m			h m	h m	h m	h m	
09	315	45.5	21.0	114 00.6	8.1	15 38.1	6.6	58.4					h m	h m	h m	h m	h m
10	330	45.6	21.8	128 27.7	8.1	15 44.7	6.4	58.4	N 72	22 16	03 38	03 26	02 59	■			
11	345	45.7	22.5	142 54.8	8.0	15 51.1	6.4	58.5	N 70	21 32	03 59	04 00	04 04	04 19	04 19		
12	0 45.7	N15 23.3	157 21.8	7.9	S15 57.5	6.3	58.5	68	21 04	04 15	04 24	04 40	05 10	05 10	05 10		
13	15 45.8	24.0	171 48.7	7.9	16 03.8	6.2	58.5	66	20 42	04 28	04 43	05 06	05 42	05 42	05 42		
14	30 45.9	24.8	186 15.6	7.9	16 10.0	6.1	58.5	64	20 25	04 39	04 58	05 26	06 06	06 06	06 06		
15	45 46.0	25.5	200 42.5	7.8	16 16.1	6.1	58.5	62	20 11	04 48	05 11	05 42	06 25	06 25	06 25		
16	60 46.0	26.3	215 09.3	7.7	16 22.2	5.9	58.6	60	20 00	04 56	05 22	05 56	06 40	06 40	06 40		
17	75 46.1	27.0	229 36.0	7.7	16 28.1	5.8	58.6	N 58	19 50	05 03	05 32	06 08	06 54	06 54	06 54		
18	90 46.2	N15 27.7	244 02.7	7.6	S16 33.9	5.7	58.6	56	19 41	05 10	05 40	06 18	07 05	07 05	07 05		
19	105 46.2	28.5	258 29.3	7.5	16 39.6	5.6	58.6	54	19 33	05 15	05 48	06 27	07 15	07 15	07 15		
20	120 46.3	29.2	272 55.8	7.5	16 45.2	5.5	58.6	52	19 26	05 20	05 54	06 35	07 24	07 24	07 24		
21	135 46.4	30.0	287 22.3	7.5	16 50.7	5.5	58.6	50	19 20	05 25	06 00	06 42	07 32	07 32	07 32		
22	150 46.4	30.7	301 48.8	7.4	16 56.2	5.3	58.7	45	19 06	05 35	06 13	06 58	07 49	07 49	07 49		
23	165 46.5	31.4	316 15.2	7.4	17 01.5	5.2	58.7	N 40	18 55	05 43	06 24	07 10	08 03	08 03	08 03		
WEDNESDAY	00	180	46.6	N15 32.2	330	41.6	7.3	S17 06.7	5.1	58.7	35	18 46	19 13	19 46	05 51	06 33	07 21
	01	195	46.7	32.9	345 07.9	7.2	17 11.8	5.0	58.7	30	18 38	19 03	19 34	05 57	06 41	07 31	
	02	210	46.7	33.7	359 34.1	7.2	17 16.8	4.9	58.7	20	18 24	18 47	19 14	06 08	06 56	07 47	
	03	225	46.8	34.4	14 00.3	7.2	17 21.7	4.8	58.7	N 10	18 12	18 33	18 59	06 18	07 08	08 02	
	04	240	46.9	35.1	28 26.5	7.1	17 26.5	4.7	58.8	0	18 00	18 22	18 47	06 27	07 20	08 15	
	05	255	46.9	35.9	42 52.6	7.0	17 31.2	4.5	58.8	S 10	17 49	18 11	18 36	06 36	07 31	08 29	
	06	270	47.0	N15 36.6	57 18.6	7.0	S17 35.7	4.5	58.8	20	17 38	18 00	18 27	06 46	07 44	08 43	
	07	285	47.1	37.4	71 44.6	7.0	17 40.2	4.4	58.8	30	17 24	17 49	18 17	06 57	07 58	09 00	
	08	300	47.1	38.1	86 10.6	6.9	17 44.6	4.2	58.8	35	17 17	17 43	18 13	07 03	08 06	09 09	
	09	315	47.2	38.8	100 36.5	6.9	17 48.8	4.1	58.8	40	17 08	17 36	18 08	07 10	08 15	09 20	
	10	330	47.3	39.6	115 02.4	6.8	17 52.9	4.1	58.8	45	16 58	17 29	18 03	07 19	08 26	09 33	
	11	345	47.3	40.3	129 28.2	6.8	17 57.0	3.9	58.9	S 50	16 46	17 20	17 58	07 29	08 40	09 49	
	12	0 47.4	N15 41.0	143 54.0	6.8	S18 00.9	3.8	58.9	52	16 40	17 16	17 56	07 34	08 46	09 56	11 01	
	13	15 47.5	41.8	158 19.8	6.7	18 04.7	3.7	58.9	54	16 34	17 12	17 54	07 39	08 53	10 04	11 09	
	14	30 47.5	42.5	172 45.5	6.7	18 08.4	3.5	58.9	56	16 27	17 07	17 51	07 45	09 01	10 13	11 19	
	15	45 47.6	43.2	187 11.2	6.6	18 11.9	3.5	58.9	58	16 19	17 02	17 49	07 52	09 10	10 24	11 31	
	16	60 47.7	44.0	201 36.8	6.6	18 15.4	3.3	58.9	S 60	16 10	16 56	17 46	07 59	09 19	10 36	11 44	
	17	75 47.7	44.7	216 02.4	6.6	18 18.7	3.2	58.9	Day	SUN		MOON					
	18	90 47.8	N15 45.4	230 28.0	6.5	S18 21.9	3.1	58.9		Eqn. of Time	Mer. Pass.	Mer. Upper	Mer. Lower	Age	Phase		
	19	105 47.9	46.2	244 53.5	6.5	18 25.0	3.0	59.0	1	02 52	02 56	11 57	00 14	12 40	16		
	20	120 47.9	46.9	259 19.0	6.4	18 28.0	2.9	59.0	2	02 59	03 03	11 57	01 07	13 34	17		
	21	135 48.0	47.6	273 44.4	6.5	18 30.9	2.7	59.0	3	03 06	03 09	11 57	02 02	14 30	18		
	22	150 48.0	48.4	288 09.9	6.												

		ARIES		VENUS -4.1		MARS +1.4		JUPITER -1.9		SATURN +0.8		STARS			
G.M.T.		G.H.A.	G.H.A.	Dec.	G.H.A.	Dec.	G.H.A.	Dec.	G.H.A.	Dec.	Name	S.H.A.	Dec.		
d	h	°	'	°	°	'	°	'	°	'		°	'		
THURSDAY	00	221 38.3	210 43.6	N 7 05.3	100 08.6	N22 11.3	272 44.9	S19 01.0	279 37.6	S20 13.7	Acamar	315 48.7	S 40 27.7		
	01	236 40.8	225 45.7	04.9	115 09.7	11.0	287 47.2	01.0	294 40.1	13.7	Achernar	335 56.7	S 57 26.0		
	02	251 43.3	240 47.8	04.5	130 10.8	10.7	302 49.5	00.9	309 42.5	13.7	Acrux	173 52.8	S 62 53.3		
	03	266 45.7	255 49.9	.. 04.0	145 12.0	.. 10.4	317 51.8	.. 00.9	324 44.9	.. 13.7	Adhara	255 43.7	S 28 55.4		
	04	281 48.2	270 52.0	03.6	160 13.1	10.1	332 54.0	00.9	339 47.4	13.6	Aldebaran	291 35.0	N 16 25.8		
	05	296 50.6	285 54.0	03.2	175 14.2	09.8	347 56.3	00.8	354 49.8	13.6					
	06	311 53.1	300 56.1	N 7 02.8	190 15.3	N22 09.5	2 58.6	S19 00.8	9 52.3	S20 13.6	Alioth	166 54.8	N 56 10.3		
	07	326 55.6	315 58.2	02.4	205 16.4	09.2	18 00.9	00.8	24 54.7	13.6	Alkaid	153 29.5	N 49 30.5		
	08	341 58.0	331 00.2	02.0	220 17.6	08.9	33 03.2	00.7	39 57.1	13.6	Al Na'ir	28 33.3	S 47 08.8		
	09	357 00.5	346 02.3	.. 01.5	235 18.7	.. 08.6	48 05.5	.. 00.7	54 59.6	.. 13.6	Alnilam	276 26.6	S 1 13.3		
	10	12 03.0	1 04.3	01.1	250 19.8	08.3	63 07.8	00.7	70 02.0	13.6	Alphard	218 34.8	S 8 29.6		
	11	27 05.4	16 06.4	00.7	265 20.9	08.0	78 10.1	00.6	85 04.5	13.6					
	12	42 07.9	31 08.4	N 7 00.3	280 22.0	N22 07.7	93 12.4	S19 00.6	100 06.9	S20 13.6	Alphecca	126 44.1	N 26 50.7		
	13	57 10.4	46 10.5	6 59.9	295 23.2	07.4	108 14.7	00.6	115 09.3	13.6	Alpheratz	358 24.6	N 28 52.4		
	14	72 12.8	61 12.5	59.5	310 24.3	07.1	123 17.0	00.5	130 11.8	13.6	Altair	62 46.6	N 8 45.8		
	15	87 15.3	76 14.6	.. 59.1	325 25.4	.. 06.8	138 19.3	.. 00.5	145 14.2	.. 13.6	Ankaa	353 54.9	S 42 30.9		
	16	102 17.8	91 16.6	58.7	340 26.5	06.5	153 21.6	00.5	160 16.7	13.6	Antares	113 14.3	S 26 20.8		
	17	117 20.2	106 18.6	58.3	355 27.7	06.2	168 23.9	00.4	175 19.1	13.6					
	18	132 22.7	121 20.6	N 6 57.9	10 28.8	N22 05.9	183 26.2	S19 00.4	190 21.5	S20 13.6	Arcturus	146 31.4	N 19 23.0		
	19	147 25.1	136 22.7	57.5	25 29.9	05.6	198 28.5	00.4	205 24.0	13.6	Atria	108 51.0	S 68 57.3		
	20	162 27.6	151 24.7	57.1	40 31.0	05.3	213 30.8	00.3	220 26.4	13.6	Avior	234 34.2	S 59 23.5		
	21	177 30.1	166 26.7	.. 56.7	55 32.1	.. 04.9	228 33.0	.. 00.3	235 28.9	.. 13.6	Bellatrix	279 14.6	N 6 18.7		
	22	192 32.5	181 28.7	56.4	70 33.3	04.6	243 35.3	00.3	250 31.3	13.6	Betelgeuse	271 44.2	N 7 23.9		
23	207 35.0	196 30.7	56.0	85 34.4	04.3	258 37.6	00.2	265 33.8	13.6						
FRIDAY	00	222 37.5	211 32.7	N 6 55.6	100 35.5	N22 04.0	273 39.9	S19 00.2	280 36.2	S20 13.6	Canopus	264 14.0	S 52 40.8		
	01	237 39.9	226 34.7	55.2	115 36.6	03.7	288 42.2	00.2	295 38.6	13.6	Capella	281 33.1	N 45 57.5		
	02	252 42.4	241 36.7	54.8	130 37.7	03.4	303 44.5	00.1	310 41.1	13.6	Deneb	49 58.3	N 45 08.2		
	03	267 44.9	256 38.7	.. 54.4	145 38.8	.. 03.1	318 46.8	.. 00.1	325 43.5	.. 13.6	Denebola	183 13.6	N 14 47.3		
	04	282 47.3	271 40.7	54.1	160 40.0	02.8	333 49.1	00.1	340 46.0	13.6	Diphda	349 35.7	S 18 12.0		
	05	297 49.8	286 42.7	53.7	175 41.1	02.5	348 51.4	00.0	355 48.4	13.6					
	06	312 52.3	301 44.7	N 6 53.3	190 42.2	N22 02.2	3 53.7	S19 00.0	10 50.9	S20 13.6	Dubhe	194 39.7	N 61 57.8		
	07	327 54.7	316 46.7	52.9	205 43.3	01.9	18 56.0	19 00.0	25 53.3	13.6	Elmath	279 02.8	N 28 34.4		
	08	342 57.2	331 48.6	52.6	220 44.4	01.6	33 58.3	18 59.9	40 55.8	13.6	Eltanin	91 04.1	N 51 29.5		
	09	357 59.6	346 50.6	.. 52.2	235 45.6	.. 01.3	49 00.6	.. 59.9	55 58.2	.. 13.6	Enif	34 25.9	N 9 41.1		
	10	13 02.1	1 52.6	51.8	250 46.7	01.0	64 02.9	59.9	71 00.6	13.6	Fomalhaut	16 07.6	S 29 49.6		
	11	28 04.6	16 54.5	51.5	265 47.8	00.6	79 05.2	59.8	86 03.1	13.6					
	12	43 07.0	31 56.5	N 6 51.1	280 48.9	N22 00.3	94 07.5	S18 59.8	101 05.5	S20 13.6	Gacrux	172 44.3	S 56 54.0		
	13	58 09.5	46 58.5	50.8	295 50.0	22 00.0	109 09.8	59.8	116 08.0	13.6	Gienah	176 32.6	S 17 19.7		
	14	73 12.0	62 00.4	50.4	310 51.1	21 59.7	124 12.1	59.8	131 10.4	13.6	Hadar	149 43.2	S 60 11.2		
	15	88 14.4	77 02.4	.. 50.1	325 52.3	.. 59.4	139 14.4	.. 59.7	146 12.9	.. 13.6	Hamal	328 45.6	N 23 16.6		
	16	103 16.9	92 04.3	49.7	340 53.4	59.1	154 16.7	59.7	161 15.3	13.6	Kaus Aust.	84 35.8	S 34 24.1		
	17	118 19.4	107 06.3	49.3	355 54.5	58.8	169 19.0	59.7	176 17.8	13.6					
	18	133 21.8	122 08.2	N 6 49.0	10 55.6	N21 58.5	184 21.4	S18 59.6	191 20.2	S20 13.6	Kochab	137 17.2	N 74 18.9		
	19	148 24.3	137 10.2	48.7	25 56.7	58.2	199 23.7	59.6	206 22.7	13.6	Markab	14 17.8	N 14 59.6		
	20	163 26.8	152 12.1	48.3	40 57.9	57.9	214 26.0	59.6	221 25.1	13.6	Menkar	314 56.6	N 3 56.1		
	21	178 29.2	167 14.0	.. 48.0	55 59.0	.. 57.6	229 28.3	.. 59.5	236 27.6	.. 13.6	Menkent	148 53.7	S 36 10.8		
	22	193 31.7	182 16.0	47.6	71 00.1	57.2	244 30.6	59.5	251 30.0	13.6	Miaplacidus	221 48.0	S 69 33.8		
23	208 34.1	197 17.9	47.3	86 01.2	56.9	259 32.9	59.5	266 32.5	13.6						
SATURDAY	00	223 36.6	212 19.8	N 6 46.9	101 02.3	N21 56.6	274 35.2	S18 59.4	281 34.9	S20 13.6	Mirfak	309 37.3	N 49 43.3		
	01	238 39.1	227 21.7	46.6	116 03.4	56.3	289 37.5	59.4	296 37.3	13.6	Nunki	76 47.0	S 26 20.6		
	02	253 41.5	242 23.6	46.3	131 04.6	56.0	304 39.8	59.4	311 39.8	13.6	Peacock	54 21.2	S 56 51.3		
	03	268 44.0	257 25.6	.. 45.9	146 05.7	.. 55.7	319 42.1	.. 59.4	326 42.2	.. 13.6	Pollux	244 16.1	N 28 07.2		
	04	283 46.5	272 27.5	45.6	161 06.8	55.4	334 44.4	59.3	341 44.7	13.6	Procyon	245 41.1	N 5 19.4		
	05	298 48.9	287 29.4	45.3	176 07.9	55.1	349 46.7	59.3	356 47.1	13.6					
	06	313 51.4	302 31.3	N 6 45.0	191 09.0	N21 54.7	4 49.0	S18 59.3	11 49.6	S20 13.6	Rasalhague	96 42.8	N 12 35.2		
	07	328 53.9	317 33.2	44.6	206 10.1	54.4	19 51.3	59.2	26 52.0	13.6	Regulus	208 25.4	N 12 09.4		
	08	343 56.3	332 35.1	44.3	221 11.2	54.1	34 53.6	59.2	41 54.5	13.6	Rigel	281 50.2	S 8 15.0		
	09	358 58.8	347 37.0	.. 44.0	236 12.4	.. 53.8	49 55.9	.. 59.2	56 56.9	.. 13.6	Rigel Kent.	140 44.9	S 60 40.5		
	10	14 01.3	2 38.9	43.7	251 13.5	53.5	64 58.2	59.1	71 59.4	13.6	Sabik	102 57.5	S 15 40.6		
	11	29 03.7	17 40.8	43.4	266 14.6	53.2	80 00.6	59.1	87 01.8	13.6					
	12	44 06.2	32 42.6	N 6 43.0	281 15.7	N21 52.9	95 02.9	S18 59.1	102 04.3	S20 13.6	Schedar	350 25.9	N 56 19.2		
	13	59 08.6	47 44.5	42.7	296 16.8	52.6	110 05.2	59.0	117 06.7	13.6	Shaula	97 15.1	S 37 04.5		
	14	74 11.1	62 46.4	42.4	311 17.9	52.2	125 07.5	59.0	132 09.2	13.6	Sirius	259 08.7	S 16 40.0		
	15	89 13.6	77 48.3	.. 42.1	326 19.1	.. 51.9	140 09.8	.. 59.0	147 11.6	.. 13.6	Spica	159 12.5	S 10 57.6		
	16	104 16.0	92 50.1	41.8	341 20.2	51.6	155 12.1	59.0	162 14.1	13.6	Suhail	223 21.4	S 43 16.9		
	17	119 18.5	107 52.0	41.5	356 21.3	51.3	170 14.4	58.9	177 16.5	13.6					
	18	134 21.0	122 53.9	N 6 41.2	11 22.4	N21 51.0	185 16.7	S18 58.9	192 19.0	S20 13.6	Vega	81 05.4	N 38 44.7		
	19	149 23.4	137 55.7	40.9	26 23.5	50.7	200 19.0	58.9	207 21.4	13.6	Zuben'ubi	137 48.8	S 15 52.9		
	20	164 25.9	152 57.6	40.6	41 24.6	50.4	215 21.3	58.8	222 23.9	13.6					
	21	179 28.4	167 59.4	.. 40.3	56 25.7	.. 50.0	230 23.7	.. 58.8	237 26.3	.. 13.6					
	22	194 30.8	183 01.3	40.0	71 26.9	49.7	245 26.0	58.8	252 28.8	13.6	Venus	348 55.2	9 53		
23	209 33.3	198 03.1	39.7	86 28.0	49.4	260 28.3	58.7	267 31.2	13.6	Mars	237 58.0	17 16			
Mer. Pass.		9 08.0	v	2.0	d	0.4	v	1.1	d	0.3	v	2.3	d	0.0	
		h	m									S.H.A.	Mer. Pass.		
												°	h	m	
													51	02.4	5 44
													57	58.7	5 17

G.M.T.		SUN		MOON				Lat.	Twilight		Sun-rise	Moonrise							
		G.H.A.	Dec.	G.H.A.	<i>v</i>	Dec.	<i>d</i>		H.P.	Naut.		Civil	4	5	6	7			
d	h	°	'	°	'	°	'	'	°	h	m	h	m	h	m	h	m	h	m
4	00	180	48.2	N15	49.8	317	00.6	6.4	S18	38.8	2.4	59.0	N 72	01 16	01 35	02 45	03 08	03 15	
	01	195	48.2		50.5	331	26.0	6.3	18	41.2	2.2	59.0	N 70	02 08	02 40	01 49	02 28	02 48	
	02	210	48.3		51.3	345	51.3	6.3	18	43.4	2.2	59.0	68	02 40	00 44	01 49	02 28	02 48	
	03	225	48.4		52.0	0	16.6	6.2	18	45.6	2.0	59.0	66	01 30	03 03	00 12	01 16	02 27	
	04	240	48.4		52.7	14	41.8	6.2	18	47.6	1.9	59.1	64	02 07	03 21	24 52	00 52	01 38	
	05	255	48.5		53.5	29	07.0	6.2	18	49.5	1.8	59.1	62	02 33	03 36	24 32	00 32	01 20	
	06	270	48.6	N15	54.2	43	32.2	6.2	S18	51.3	1.7	59.1	60	01 20	02 53	24 17	00 17	01 06	
	07	285	48.6		54.9	57	57.4	6.2	18	53.0	1.5	59.1	N 58	03 09	03 59	24 03	00 03	01 34	
	08	300	48.7		55.6	72	22.6	6.1	18	54.5	1.4	59.1	56	02 18	03 22	23 52	24 43	00 43	
	09	315	48.7		56.4	86	47.7	6.2	18	55.9	1.3	59.1	54	02 36	03 34	24 16	24 34	00 34	
T H U R S D A Y	10	330	48.8		57.1	101	12.9	6.1	18	57.2	1.2	59.1	52	02 52	03 44	24 23	24 25	00 25	
	11	345	48.9		57.8	115	38.0	6.0	18	58.4	1.0	59.1	50	03 05	03 53	24 30	24 18	00 18	
	12	0	48.9	N15	58.5	130	03.0	6.1	S18	59.4	0.9	59.1	45	03 30	04 11	24 44	23 07	00 02	
	13	15	49.0		59.2	144	28.1	6.1	19	00.3	0.8	59.1	N 40	03 50	04 26	24 56	22 53	23 48	
	14	30	49.0		00.0	158	53.2	6.0	19	01.1	0.7	59.2	35	04 05	04 38	25 06	22 41	23 37	
	15	45	49.1		00.7	173	18.2	6.1	19	01.8	0.5	59.2	30	04 18	04 49	25 14	22 31	23 27	
	16	60	49.2		01.4	187	43.3	6.0	19	02.3	0.4	59.2	20	04 38	05 06	25 29	22 13	23 10	
	17	75	49.2		02.1	202	08.3	6.0	19	02.7	0.3	59.2	N 10	04 54	05 20	25 42	21 58	22 55	
	18	90	49.3	N16	02.9	216	33.3	6.0	S19	03.0	0.2	59.2	0	05 07	05 32	25 53	21 43	22 41	
	19	105	49.3		03.6	230	58.3	6.0	19	03.2	0.0	59.2	S 10	05 18	05 43	26 05	21 28	22 27	
F R I D A Y	20	120	49.4		04.3	245	23.3	6.0	19	03.2	0.1	59.2	20	05 28	05 54	26 17	21 13	22 12	
	21	135	49.5		05.0	259	48.3	6.0	19	03.1	0.2	59.2	30	05 38	06 06	26 31	20 55	21 55	
	22	150	49.5		05.7	274	13.3	6.0	19	02.9	0.3	59.2	35	05 43	06 13	26 39	20 45	21 46	
	23	165	49.6		06.5	288	38.3	5.9	19	02.6	0.5	59.2	40	05 48	06 20	26 49	20 33	21 34	
	00	180	49.6	N16	07.2	303	03.2	6.0	S19	02.1	0.6	59.2	45	05 53	06 28	26 59	20 19	21 21	
	01	195	49.7		07.9	317	28.2	6.0	19	01.5	0.7	59.2	S 50	05 59	06 37	27 12	20 02	21 05	
	02	210	49.7		08.6	331	53.2	6.0	19	00.8	0.8	59.2	52	06 01	06 42	27 18	19 54	20 57	
	03	225	49.8		09.3	346	18.2	5.9	19	00.0	1.0	59.2	54	06 04	06 46	27 25	19 45	20 48	
	04	240	49.9		10.0	0	43.1	6.0	18	59.0	1.1	59.2	56	06 07	06 51	27 32	19 35	20 39	
	05	255	49.9		10.8	15	08.1	6.0	18	57.9	1.2	59.3	58	06 10	06 57	27 40	19 24	20 28	
S A T U R D A Y	06	270	50.0	N16	11.5	29	33.1	6.0	S18	56.7	1.4	59.3	S 60	06 13	07 03	27 50	19 11	20 15	
	07	285	50.0		12.2	43	58.1	6.0	18	55.3	1.4	59.3							
	08	300	50.1		12.9	58	23.1	6.0	18	53.9	1.6	59.3	Lat.	Sun-set	Twilight	Moonset			
	09	315	50.1		13.6	72	48.1	6.0	18	52.3	1.7	59.3			Civil	Naut.	4		
	10	330	50.2		14.3	87	13.1	6.1	18	50.6	1.9	59.3					5		
	11	345	50.2		15.0	101	38.2	6.0	18	48.7	2.0	59.3					6		
	12	0	50.3	N16	15.8	116	03.2	6.1	S18	46.7	2.1	59.3	N 72	22 47	04 19	05 11	06 48		
	13	15	50.4		16.5	130	28.3	6.0	18	44.6	2.2	59.3	N 70	21 50	05 10	06 06	07 29		
	14	30	50.4		17.2	144	53.3	6.1	18	42.4	2.3	59.3	68	21 17	05 42	06 39	07 57		
	15	45	50.5		17.9	159	18.4	6.1	18	40.1	2.5	59.3	66	20 53	06 06	07 04	08 18		
S A T U R D A Y	16	60	50.5		18.6	173	43.5	6.1	18	37.6	2.6	59.3	64	20 35	06 06	07 04	08 18		
	17	75	50.6		19.3	188	08.6	6.1	18	35.0	2.7	59.3	62	20 20	06 25	07 23	08 35		
	18	90	50.6	N16	20.0	202	33.7	6.2	S18	32.3	2.8	59.3	60	20 07	06 40	07 38	08 49		
	19	105	50.7		20.7	216	58.9	6.1	18	29.5	3.0	59.3	N 58	19 56	06 54	07 52	09 01		
	20	120	50.7		21.4	231	24.0	6.2	18	26.5	3.0	59.3	56	19 47	07 05	08 03	09 11		
	21	135	50.8		22.1	245	49.2	6.2	18	23.5	3.2	59.3	54	19 39	07 15	08 13	09 20		
	22	150	50.8		22.9	260	14.4	6.2	18	20.3	3.3	59.3	52	19 31	07 24	08 22	09 29		
	23	165	50.9		23.6	274	39.6	6.3	18	17.0	3.5	59.3	50	19 24	07 32	08 30	09 36		
	00	180	50.9	N16	24.3	289	04.9	6.3	S18	13.5	3.5	59.3	45	19 10	07 43	08 47	09 52		
	01	195	51.0		25.0	303	30.2	6.3	18	10.0	3.7	59.3	N 40	18 58	08 03	09 01	10 05		
02	210	51.0		25.7	317	55.5	6.3	18	06.3	3.8	59.3	35	18 48	08 15	09 13	10 15			
03	225	51.1		26.4	332	20.8	6.4	18	02.5	3.9	59.3	30	18 40	08 25	09 23	10 25			
04	240	51.1		27.1	346	46.2	6.3	17	58.6	4.0	59.3	20	18 25	08 43	09 41	10 41			
05	255	51.2		27.8	1	11.5	6.5	17	54.6	4.2	59.3	N 10	18 12	08 58	09 57	10 55			
06	270	51.2	N16	28.5	15	37.0	6.4	S17	50.4	4.2	59.3	0	18 00	08 22	09 13	10 11			
07	285	51.3		29.2	30	02.4	6.5	17	46.2	4.4	59.3	S 10	17 48	09 27	10 25	11 22			
08	300	51.3		29.9	44	27.9	6.5	17	41.8	4.5	59.3	20	17 36	09 43	10 41	11 36			
09	315	51.4		30.6	58	53.4	6.5	17	37.3	4.6	59.3	30	17 22	09 58	10 58	11 52			
10	330	51.4		31.3	73	18.9	6.6	17	32.7	4.7	59.3	35	17 14	10 10	11 08	12 01			
11	345	51.5		32.0	87	44.5	6.6	17	28.0	4.9	59.3	40	17 04	10 22	11 20	12 12			
12	0	51.5	N16	32.7	102	10.1	6.6	S17	23.1	4.9	59.3	45	16 54	10 36	11 33	12 24			
13	15	51.6		33.4	116	35.7	6.7	17	18.2	5.1	59.3	S 50	16 41	10 53	11 50	12 39			
14	30	51.6		34.1	131	01.4	6.7	17	13.1	5.1	59.3	52	16 35	11 01	11 58	12 46			
15	45	51.7		34.8	145	27.1	6.7	17	08.0	5.3	59.3	54	16 28	11 09	12 06	12 54			
16	60	51.7		35.5	159	52.8	6.8	17	02.7	5.4	59.3	56	16 21	11 19	12 16	13 02			
17	75	51.8		36.2	174	18.6	6.8	16	57.3	5.5	59.3	58	16 12	11 31	12 27	13 12			
18	90	51.8	N16	36.9	188	44.4	6.9	S16	51.8	5.6	59.3	S 60	16 03	11 44	12 40	13 23			
19	105	51.9		37.6	203	10.3	6.9	16	46.2	5.7	59.3								
20	120	51.9		38.3	217	36.2	6.9	16	40.5	5.8	59.3	Day	SUN	MOON					
21	135	51.9		39.0	232	02.1	7.0	16	34.7	5.9	59.3	Eqn. of Time	Mer. Pass.	Mer. Upper	Pass. Lower	Age			
22	150	52.0		39.7	246	28.1	7.0	16	28.8	6.1	59.3	00h	12h			Phase			
23	165	52.0		40.4	260	54.1	7.0	16	22.7	6.1	59.3	m s	m s	h m	h m	d			
		S.D.	15.9	d	0.7	S.D.	16.1	16.2	16.2			4	03 13	03 16	11 57	02 59	15 28		
												5	03 18	03					

	ARIES		VENUS -4.2		MARS +1.4		JUPITER -1.9		SATURN +0.7		STARS			
G.M.T.	G.H.A.		G.H.A.	Dec.	G.H.A.	Dec.	G.H.A.	Dec.	G.H.A.	Dec.	Name	S.H.A.	Dec.	
d	h	° ' "	° ' "	° ' "	° ' "	° ' "	° ' "	° ' "	° ' "	° ' "		° ' "	° ' "	
SUNDAY	7	00	224 35.7	213 05.0 N	6 39.4	101 29.1 N	21 49.1	275 30.6 S	18 58.7	282 33.7 S	20 13.6	Acamar	315 48.7 S	40 27.7
	01	239 38.2	228 06.8	39.1	116 30.2	48.8	290 32.9	58.7	297 36.1	13.6	Achernar	335 56.7 S	57 26.0	
	02	254 40.7	243 08.7	38.8	131 31.3	48.5	305 35.2	58.7	312 38.6	13.6	Acrux	173 52.8 S	62 53.3	
	03	269 43.1	258 10.5	38.6	146 32.4	48.1	320 37.5	58.6	327 41.0	13.6	Adhara	255 43.7 S	28 55.4	
	04	284 45.6	273 12.3	38.3	161 33.5	47.8	335 39.8	58.6	342 43.5	13.6	Aldebaran	291 35.0 N	16 25.8	
	05	299 48.1	288 14.2	38.0	176 34.6	47.5	350 42.2	58.6	357 45.9	13.7				
	06	314 50.5	303 16.0 N	6 37.7	191 35.8 N	21 47.2	5 44.5 S	18 58.5	12 48.4 S	20 13.7	Alioth	166 54.8 N	56 10.4	
	07	329 53.0	318 17.8	37.4	206 36.9	46.9	20 46.8	58.5	27 50.9	13.7	Alkaid	153 29.5 N	49 30.5	
	08	344 55.5	333 19.6	37.2	221 38.0	46.6	35 49.1	58.5	42 53.3	13.7	Al Na'ir	28 33.3 S	47 08.8	
	09	359 57.9	348 21.5	36.9	236 39.1	46.2	50 51.4	58.5	57 55.8	13.7	Alnilam	276 26.7 S	1 13.7	
	10	15 00.4	3 23.3	36.6	251 40.2	45.9	65 53.7	58.4	72 58.2	13.7	Alphard	218 34.8 S	8 29.6	
	11	30 02.9	18 25.1	36.3	266 41.3	45.6	80 56.0	58.4	88 00.7	13.7				
	12	45 05.3	33 26.9 N	6 36.1	281 42.4 N	21 45.3	95 58.4 S	18 58.4	103 03.1 S	20 13.7	Alphecca	126 44.1 N	26 50.7	
	13	60 07.8	48 28.7	35.8	296 43.5	45.0	111 00.7	58.3	118 05.6	13.7	Alpheratz	358 24.6 N	28 52.4	
	14	75 10.2	63 30.5	35.5	311 44.7	44.6	126 03.0	58.3	133 08.0	13.7	Altair	62 46.5 N	8 45.8	
	15	90 12.7	78 32.3	35.3	326 45.8	44.3	141 05.3	58.3	148 10.5	13.7	Ankaa	353 54.9 S	42 30.9	
	16	105 15.2	93 34.1	35.0	341 46.9	44.0	156 07.6	58.3	163 12.9	13.7	Antares	113 14.3 S	26 20.8	
	17	120 17.6	108 35.9	34.7	356 48.0	43.7	171 10.0	58.2	178 15.4	13.7				
	18	135 20.1	123 37.7 N	6 34.5	11 49.1 N	21 43.4	186 12.3 S	18 58.2	193 17.9 S	20 13.7	Arcturus	146 31.4 N	19 23.0	
	19	150 22.6	138 39.4	34.2	26 50.2	43.0	201 14.6	58.2	208 20.3	13.7	Atria	108 51.0 S	68 57.3	
	20	165 25.0	153 41.2	34.0	41 51.3	42.7	216 16.9	58.2	223 22.8	13.7	Avior	234 34.2 S	59 23.5	
	21	180 27.5	168 43.0	33.7	56 52.4	42.4	231 19.2	58.1	238 25.2	13.7	Bellatrix	279 14.6 N	6 18.7	
	22	195 30.0	183 44.8	33.5	71 53.6	42.1	246 21.5	58.1	253 27.7	13.7	Betelgeuse	271 44.2 N	7 23.9	
	23	210 32.4	198 46.5	33.2	86 54.7	41.8	261 23.9	58.1	268 30.1	13.7				
MONDAY	8	00	225 34.9	213 48.3 N	6 33.0	101 55.8 N	21 41.4	276 26.2 S	18 58.0	283 32.6 S	20 13.7	Canopus	264 14.0 S	52 40.8
	01	240 37.4	228 50.1	32.7	116 56.9	41.1	291 28.5	58.0	298 35.0	13.7	Capella	281 33.1 N	45 57.5	
	02	255 39.8	243 51.8	32.5	131 58.0	40.8	306 30.8	58.0	313 37.5	13.7	Deneb	49 58.2 N	45 08.3	
	03	270 42.3	258 53.6	32.3	146 59.1	40.5	321 33.1	58.0	328 40.0	13.7	Denebola	183 13.6 N	14 47.3	
	04	285 44.7	273 55.4	32.0	162 00.2	40.2	336 35.5	57.9	343 42.4	13.7	Diphda	349 35.7 S	18 12.0	
	05	300 47.2	288 57.1	31.8	177 01.3	39.8	351 37.8	57.9	358 44.9	13.7				
	06	315 49.7	303 58.9 N	6 31.5	192 02.4 N	21 39.5	6 40.1 S	18 57.9	13 47.3 S	20 13.7	Dubhe	194 39.7 N	61 57.8	
	07	330 52.1	319 00.6	31.3	207 03.5	39.2	21 42.4	57.9	28 49.8	13.7	Elnath	279 02.8 N	28 34.4	
	08	345 54.6	334 02.4	31.1	222 04.7	38.9	36 44.8	57.8	43 52.2	13.7	Eltanin	91 04.1 N	51 29.5	
	09	0 57.1	349 04.1	30.8	237 05.8	38.6	51 47.1	57.8	58 54.7	13.7	Enif	34 25.8 N	9 41.7	
	10	15 59.5	4 05.8	30.6	252 06.9	38.2	66 49.4	57.8	73 57.2	13.7	Fomalhaut	16 07.6 S	29 49.6	
	11	31 02.0	19 07.6	30.4	267 08.0	37.9	81 51.7	57.8	88 59.6	13.7				
	12	46 04.5	34 09.3 N	6 30.2	282 09.1 N	21 37.6	96 54.1 S	18 57.7	104 02.1 S	20 13.7	Gacrux	172 44.4 S	56 54.0	
	13	61 06.9	49 11.0	29.9	297 10.2	37.3	111 56.4	57.7	119 04.5	13.7	Gienah	176 32.6 S	17 19.7	
	14	76 09.4	64 12.8	29.7	312 11.3	36.9	126 58.7	57.7	134 07.0	13.7	Hadar	149 43.2 S	60 11.3	
	15	91 11.9	79 14.5	29.5	327 12.4	36.6	142 01.0	57.6	149 09.4	13.7	Hamal	328 45.6 N	23 16.6	
	16	106 14.3	94 16.2	29.3	342 13.5	36.3	157 03.4	57.6	164 11.9	13.7	Kaus Aust.	84 35.8 S	34 24.1	
	17	121 16.8	109 17.9	29.1	357 14.6	36.0	172 05.7	57.6	179 14.4	13.7				
	18	136 19.2	124 19.6 N	6 28.9	12 15.7 N	21 35.6	187 08.0 S	18 57.6	194 16.8 S	20 13.7	Kochab	137 17.2 N	74 19.0	
	19	151 21.7	139 21.3	28.6	27 16.9	35.3	202 10.3	57.5	209 19.3	13.7	Markab	14 17.7 N	14 59.6	
	20	166 24.2	154 23.1	28.4	42 18.0	35.0	217 12.7	57.5	224 21.7	13.7	Menkar	314 56.6 N	3 56.1	
	21	181 26.6	169 24.8	28.2	57 19.1	34.7	232 15.0	57.5	239 24.2	13.7	Menkent	148 53.7 S	36 10.9	
	22	196 29.1	184 26.5	28.0	72 20.2	34.3	247 17.3	57.5	254 26.7	13.7	Miaplacidus	221 48.0 S	69 33.8	
	23	211 31.6	199 28.2	27.8	87 21.3	34.0	262 19.6	57.4	269 29.1	13.7				
TUESDAY	9	00	226 34.0	214 29.9 N	6 27.6	102 22.4 N	21 33.7	277 22.0 S	18 57.4	284 31.6 S	20 13.7	Mirfak	309 37.3 N	49 43.3
	01	241 36.5	229 31.5	27.4	117 23.5	33.4	292 24.3	57.4	299 34.0	13.8	Nunki	76 46.9 S	26 20.6	
	02	256 39.0	244 33.2	27.2	132 24.6	33.0	307 26.6	57.4	314 36.5	13.8	Peacock	54 21.2 S	56 51.3	
	03	271 41.4	259 34.9	27.0	147 25.7	32.7	322 29.0	57.3	329 39.0	13.8	Pollux	244 16.1 N	28 07.2	
	04	286 43.9	274 36.6	26.8	162 26.8	32.4	337 31.3	57.3	344 41.4	13.8	Procyon	245 41.1 N	5 19.4	
	05	301 46.3	289 38.3	26.6	177 27.9	32.1	352 33.6	57.3	359 43.9	13.8				
	06	316 48.8	304 40.0 N	6 26.4	192 29.0 N	21 31.7	7 35.9 S	18 57.3	14 46.3 S	20 13.8	Rasalhague	96 42.8 N	12 35.2	
	07	331 51.3	319 41.6	26.2	207 30.1	31.4	22 38.3	57.2	29 48.8	13.8	Regulus	208 25.4 N	12 09.4	
	08	346 53.7	334 43.3	26.1	222 31.3	31.1	37 40.6	57.2	44 51.3	13.8	Rigel	281 50.2 S	8 15.0	
	09	1 56.2	349 45.0	25.9	237 32.4	30.7	52 42.9	57.2	59 53.7	13.8	Rigel Kent.	140 44.9 S	60 40.5	
	10	16 58.7	4 46.7	25.7	252 33.5	30.4	67 45.3	57.2	74 56.2	13.8	Sabik	102 57.5 S	15 40.6	
	11	32 01.1	19 48.3	25.5	267 34.6	30.1	82 47.6	57.1	89 58.7	13.8				
	12	47 03.6	34 50.0 N	6 25.3	282 35.7 N	21 29.8	97 49.9 S	18 57.1	105 01.1 S	20 13.8	Schedar	350 25.9 N	56 19.2	
	13	62 06.1	49 51.6	25.1	297 36.8	29.4	112 52.3	57.1	120 03.6	13.8	Shaula	97 15.1 S	37 04.5	
	14	77 08.5	64 53.3	25.0	312 37.9	29.1	127 54.6	57.1	135 06.0	13.8	Sirius	259 08.7 S	16 40.0	
	15	92 11.0	79 54.9	24.8	327 39.0	28.8	142 56.9	57.0	150 08.5	13.8	Spica	159 12.5 S	10 57.6	
	16	107 13.5	94 56.6	24.6	342 40.1	28.5	157 59.3	57.0	165 11.0	13.8	Suhail	223 21.5 S	43 16.9	
	17	122 15.9	109 58.2	24.5	357 41.2	28.1	173 01.6	57.0	180 13.4	13.8				
	18	137 18.4	124 59.9 N	6 24.3	12 42.3 N	21 27.8	188 03.9 S	18 57.0	195 15.9 S	20 13.8	Vega	81 05.4 N	38 44.7	
	19	152 20.8	140 01.5	24.1	27 43.4	27.5	203 06.3	57.0	210 18.4	13.8	Zuben'ubi	137 48.8 S	15 52.9	
	20	167 23.3	155 03.1	23.9	42 44.5	27.1	218 08.6	56.9	225 20.8	13.8				
	21	182 25.8	170 04.8	23.8	57 45.6	26.8	233 10.9	56.9	240 23.3	13.8				
	22	197 28.2	185 06.4	23.6	72 46.7	26.5	248 13.3	56.9	255 25.7	13.8				
	23	212 30.7	200 08.0	23.5	87 47.9	26.1	263 15.6	56.9	270 28.2	13.8				

G.M.T.		SUN		MOON				Lat.	Twilight		Sun-rise	Moonrise									
		G.H.A.	Dec.	G.H.A.	<i>v</i>	Dec.	<i>d</i>		H.P.	Naut.		Civil	7	8	9	10					
d	h	°	'	°	'	°	'	°	'	°	'	h	m	h	m	h	m	h	m	h	m
7	00	180	52.1	N16	41.1	275	20.1	7.1	S16	16.6	6.2	59.3	N 72	00 30	03 56	03 41	03 31	03 23			
	01	195	52.1		41.8	289	46.2	7.1		16 10.4	6.4	59.3	N 70	01 48	03 15	03 17	03 17	03 16			
	02	210	52.2		42.5	304	12.3	7.2		16 04.0	6.4	59.3	68	02 25	02 48	02 59	03 06	03 10			
	03	225	52.2	..	43.2	318	38.5	7.2		15 57.6	6.5	59.3	66	01 06	02 51	02 27	02 44	02 56	03 06		
	04	240	52.3		43.9	333	04.7	7.3		15 51.1	6.7	59.3	64	01 52	03 11	02 10	02 32	02 48	03 02		
	05	255	52.3		44.6	347	31.0	7.3		15 44.4	6.7	59.3	62	02 21	03 27	01 56	02 22	02 42	02 58		
	06	270	52.3	N16	45.3	1	57.3	7.4	S15	37.7	6.9	59.3	60	00 58	02 43	03 40	01 44	02 13	02 36	02 55	
	07	285	52.4		46.0	16	23.7	7.4		15 30.8	6.9	59.3	N 58	01 40	03 00	03 52	01 34	02 05	02 30	02 52	
	08	300	52.4		46.6	30	50.1	7.4		15 23.9	7.0	59.3	56	02 07	03 15	04 01	01 24	01 58	02 26	02 50	
	09	315	52.5	..	47.3	45	16.5	7.5		15 16.9	7.1	59.3	54	02 27	03 27	04 10	01 16	01 52	02 21	02 48	
SUNDAY	10	330	52.5		48.0	59	43.0	7.5		15 09.8	7.2	59.3	52	02 44	03 38	04 18	01 09	01 46	02 18	02 46	
	11	345	52.6		48.7	74	09.5	7.6		15 02.6	7.4	59.3	50	02 58	03 47	04 25	01 03	01 41	02 14	02 44	
	12		0 52.6	N16	49.4	88	36.1	7.6	S14	55.2	7.4	59.3	45	03 25	04 07	04 40	00 49	01 30	02 07	02 40	
	13	15	52.6		50.1	103	02.7	7.7		14 47.8	7.4	59.3	N 40	03 46	04 22	04 52	00 37	01 21	02 00	02 37	
	14	30	52.7		50.8	117	29.4	7.7		14 40.4	7.6	59.3	35	04 02	04 35	05 03	00 27	01 13	01 55	02 34	
	15	45	52.7	..	51.5	131	56.1	7.7		14 32.8	7.7	59.3	30	04 15	04 46	05 12	00 19	01 06	01 50	02 31	
	16	60	52.8		52.2	146	22.8	7.8		14 25.1	7.8	59.3	20	04 36	05 04	05 27	00 04	00 54	01 42	02 27	
	17	75	52.8		52.8	160	49.6	7.9		14 17.3	7.8	59.3	N 10	04 53	05 19	05 41	24 44	00 44	01 34	02 23	
	18	90	52.9	N16	53.5	175	16.5	7.9	S14	09.5	7.9	59.3	0	05 06	05 31	05 53	24 34	00 34	01 27	02 19	
	19	105	52.9		54.2	189	43.4	7.9		14 01.6	8.1	59.3	S 10	05 18	05 43	06 05	24 24	00 24	01 20	02 16	
MONDAY	20	120	52.9		54.9	204	10.3	8.0		13 53.5	8.1	59.3	20	05 29	05 55	06 18	24 13	00 13	01 13	02 12	
	21	135	53.0	..	55.6	218	37.3	8.0		13 45.4	8.2	59.3	30	05 39	06 08	06 33	24 01	00 01	01 05	02 07	
	22	150	53.0		56.3	233	04.3	8.1		13 37.2	8.2	59.2	35	05 45	06 15	06 42	23 54	25 00	01 00	02 05	
	23	165	53.1		57.0	247	31.4	8.1		13 29.0	8.4	59.2	40	05 50	06 23	06 51	23 46	24 54	00 54	02 02	
	00												45	05 56	06 32	07 03	23 37	24 48	00 48	01 58	
	01	180	53.1	N16	57.6	261	58.5	8.2	S13	20.6	8.4	59.2	S 50	06 03	06 41	07 16	23 26	24 40	00 40	01 54	
	02	195	53.1		58.3	276	25.7	8.2		13 12.2	8.5	59.2	52	06 05	06 46	07 23	23 20	24 36	00 36	01 52	
	03	210	53.2		59.0	290	52.9	8.3		13 03.7	8.6	59.2	54	06 08	06 51	07 30	23 15	24 32	00 32	01 50	
	04	225	53.2	16	59.7	305	20.2	8.3		12 55.1	8.7	59.2	56	06 12	06 57	07 38	23 08	24 28	00 28	01 48	
	05	240	53.3	17	00.4	319	47.5	8.4		12 46.4	8.7	59.2	58	06 15	07 03	07 47	23 01	24 23	00 23	01 46	
06	255	53.3		01.1	334	14.9	8.4		12 37.7	8.8	59.2	S 60	06 19	07 09	07 57	22 53	24 17	00 17	01 43		
TUESDAY	07	270	53.3	N17	01.7	348	42.3	8.4	S12	28.9	8.9	59.2	Lat.	Sun-set	Twilight	Moonset					
	08	285	53.4		02.4	3	09.7	8.5		12 20.0	9.0	59.2			Civil	Naut.	7	8	9	10	
	09	300	53.4		03.1	17	37.2	8.6		12 11.0	9.0	59.2									
	10	315	53.4	..	03.8	32	04.8	8.5		12 02.0	9.1	59.2									
	11	330	53.5		04.5	46	32.3	8.7		11 52.9	9.2	59.2									
	12	345	53.5		05.1	61	00.0	8.7		11 43.7	9.2	59.2	N 72	22 11	00 00	00 00	08 01	10 10	12 11	14 06	
	13		0 53.5	N17	05.8	75	27.7	8.7	S11	34.5	9.3	59.2	N 70	22 11	00 00	00 00	08 40	10 33	12 23	14 10	
	14	15	53.6		06.5	89	55.4	8.8		11 25.2	9.4	59.2	68	21 32	00 00	00 00	09 07	10 50	12 32	14 14	
	15	30	53.6		07.2	104	23.2	8.8		11 15.8	9.4	59.2	66	21 05	22 56	00 00	09 27	11 03	12 40	14 16	
	16	45	53.7	..	07.8	118	51.0	8.8		11 06.4	9.6	59.1	64	20 45	22 06	00 00	09 43	11 14	12 47	14 19	
WEDNESDAY	17	60	53.7		08.5	133	18.8	8.9		10 56.8	9.5	59.1	62	20 28	21 35	00 00	09 57	11 24	12 53	14 21	
	18	75	53.7		09.2	147	46.7	9.0		10 47.3	9.6	59.1	60	20 15	21 13	23 03	10 08	11 32	12 58	14 23	
	19	90	53.8	N17	09.9	162	14.7	9.0	S10	37.7	9.7	59.1	N 58	20 03	20 55	22 17	10 18	11 39	13 02	14 24	
	20	105	53.8		10.5	176	42.7	9.0		10 28.0	9.8	59.1	56	19 53	20 40	21 49	10 26	11 45	13 06	14 26	
	21	120	53.8		11.2	191	10.7	9.1		10 18.2	9.8	59.1	54	19 44	20 27	21 28	10 34	11 51	13 09	14 27	
	22	135	53.9	..	11.9	205	38.8	9.1		10 08.4	9.9	59.1	52	19 36	20 17	21 11	10 41	11 56	13 12	14 28	
	23	150	53.9		12.6	220	06.9	9.2		9 58.5	9.9	59.1	50	19 29	20 07	20 57	10 47	12 01	13 15	14 29	
	00	165	53.9		13.2	234	35.1	9.2		9 48.6	10.0	59.1	45	19 14	19 47	20 29	11 00	12 10	13 21	14 32	
	01	180	54.0	N17	13.9	249	03.3	9.3	S	9 38.6	10.0	59.1	N 40	19 01	19 31	20 08	11 11	12 18	13 26	14 34	
	02	195	54.0		14.6	263	31.6	9.3		9 28.6	10.1	59.1	35	18 51	19 18	19 52	11 20	12 25	13 31	14 35	
03	210	54.0		15.3	277	59.9	9.3		9 18.5	10.1	59.1	30	18 42	19 07	19 38	11 28	12 31	13 34	14 37		
04	225	54.1	..	15.9	292	28.2	9.4		9 08.4	10.2	59.1	20	18 26	18 49	19 17	11 42	12 42	13 41	14 39		
05	240	54.1		16.6	306	56.6	9.4		8 58.2	10.2	59.0	N 10	18 13	18 35	19 00	11 54	12 51	13 47	14 41		
06	255	54.1		17.3	321	25.0	9.5		8 48.0	10.3	59.0	0	18 00	18 22	18 47	12 05	13 00	13 52	14 43		
07	270	54.2	N17	17.9	335	53.5	9.4	S	8 37.7	10.3	59.0	S 10	17 48	18 09	18 35	12 16	13 08	13 58	14 45		
08	285	54.2		18.6	350	21.9	9.6		8 27.4	10.4	59.0	20	17 34	17 57	18 24	12 28	13 17	14 03	14 47		
09	300	54.2		19.3	4	50.5	9.6		8 17.0	10.4	59.0	30	17 19	17 45	18 13	12 42	13 27	14 10	14 50		
10	315	54.2	..	19.9	19	19.1	9.6		8 06.6	10.5	59.0	35	17 11	17 37	18 08	12 49	13 33	14 13	14 51		
11	330	54.3		20.6	33	47.7	9.6		7 56.1	10.5	59.0	40	17 01	17 30	18 02	12 58	13 40	14 17	14 52		
12	345	54.3		21.3	48	16.3	9.7		7 45.6	10.6	59.0	45	16 50	17 21	17 56	13 08	13 47	14 22	14 54		
13		0 54.3	N17	21.9	62	45.0	9.7	S	7 35.0	10.6	59.0	S 50	16 36	17 11	17 50	13 21	13 56	14 27	14 56		
14	15	54.4		22.6	77	13.7	9.8		7 24.4	10.6	59.0	52	16 29	17 06	17 47	13 26	14 00	14 30	14 57		
15	30	54.4		23.3	91	42.5	9.8		7 13.8	10.7	58.9	54	16 22	17 01	17 44	13 33	14 05	14 33	14 58		
16	4																				

G.M.T.		ARIES		VENUS	-4.2	MARS		+1.4	JUPITER		-2.0	SATURN		+0.7	STARS		
		G.H.A.		G.H.A.	Dec.	G.H.A.	Dec.	G.H.A.	Dec.	G.H.A.	Dec.	G.H.A.	Dec.	Name	S.H.A.	Dec.	
10	d																
	h																
	00	227 33.2	215 09.7 N	6 23.3	102 49.0 N21	25.8	278 17.9 S18	56.8	285 30.7 S20	13.8	Acamar	315 48.7	S 40 27.7				
	01	242 35.6	230 11.3	23.1	117 50.1	25.5	293 20.3	56.8	300 33.1	13.8	Achernar	335 56.7	S 57 26.0				
	02	257 38.1	245 12.9	23.0	132 51.2	25.2	308 22.6	56.8	315 35.6	13.8	Acrux	173 52.8	S 62 53.3				
WEDNESDAY	03	272 40.6	260 14.5	22.8	147 52.3	24.8	323 24.9	56.8	330 38.1	13.8	Adhara	255 43.7	S 28 55.4				
	04	287 43.0	275 16.1	22.7	162 53.4	24.5	338 27.3	56.7	345 40.5	13.8	Aldebaran	291 35.0	N 16 25.8				
	05	302 45.5	290 17.7	22.5	177 54.5	24.2	353 29.6	56.7	0 43.0	13.8							
	06	317 48.0	305 19.3 N	6 22.4	192 55.6 N21	23.8	8 31.9 S18	56.7	15 45.5 S20	13.9	Alioth	166 54.9	N 56 10.4				
	07	332 50.4	320 21.0	22.2	207 56.7	23.5	23 34.3	56.7	30 47.9	13.9	Alkaid	153 29.5	N 49 30.5				
	08	347 52.9	335 22.6	22.1	222 57.8	23.2	38 36.6	56.7	45 50.4	13.9	Al Na'ir	28 33.3	S 47 08.7				
	09	2 55.3	350 24.2	22.0	237 58.9	22.8	53 39.0	56.6	60 52.9	13.9	Alnilam	276 26.7	S 1 13.7				
	10	17 57.8	5 25.8	21.8	253 00.0	22.5	68 41.3	56.6	75 55.3	13.9	Alphard	218 34.8	S 8 29.6				
	11	33 00.3	20 27.3	21.7	268 01.1	22.2	83 43.6	56.6	90 57.8	13.9							
	12	48 02.7	35 28.9 N	6 21.5	283 02.2 N21	21.8	98 46.0 S18	56.6	106 00.3 S20	13.9	Alphecca	126 44.0	N 26 50.7				
	13	63 05.2	50 30.5	21.4	298 03.3	21.5	113 48.3	56.5	121 02.7	13.9	Alpheratz	358 24.5	N 28 52.4				
	14	78 07.7	65 32.1	21.3	313 04.4	21.2	128 50.7	56.5	136 05.2	13.9	Altair	62 46.5	N 8 45.9				
	15	93 10.1	80 33.7	21.1	328 05.5	20.8	143 53.0	56.5	151 07.7	13.9	Ankaa	353 54.9	S 42 30.9				
	16	108 12.6	95 35.3	21.0	343 06.6	20.5	158 55.3	56.5	166 10.1	13.9	Antares	113 14.3	S 26 20.8				
	17	123 15.1	110 36.8	20.9	358 07.7	20.2	173 57.7	56.5	181 12.6	13.9							
	18	138 17.5	125 38.4 N	6 20.7	13 08.8 N21	19.8	189 00.0 S18	56.4	196 15.1 S20	13.9	Arcturus	146 31.4	N 19 23.1				
	19	153 20.0	140 40.0	20.6	28 09.9	19.5	204 02.4	56.4	211 17.5	13.9	Atria	108 51.0	S 68 57.3				
	20	168 22.4	155 41.6	20.5	43 11.1	19.2	219 04.7	56.4	226 20.0	13.9	Avior	234 34.3	S 59 23.5				
	21	183 24.9	170 43.1	20.4	58 12.2	18.8	234 07.0	56.4	241 22.5	13.9	Bellatrix	279 14.6	N 6 18.7				
	22	198 27.4	185 44.7	20.2	73 13.3	18.5	249 09.4	56.3	256 24.9	13.9	Betelgeuse	271 44.2	N 7 23.9				
11	23	213 29.8	200 46.2	20.1	88 14.4	18.2	264 11.7	56.3	271 27.4	13.9							
	00	228 32.3	215 47.8 N	6 20.0	103 15.5 N21	17.8	279 14.1 S18	56.3	286 29.9 S20	13.9	Canopus	264 14.0	S 52 40.8				
	01	243 34.8	230 49.4	19.9	118 16.6	17.5	294 16.4	56.3	301 32.3	13.9	Capella	281 33.1	N 45 57.5				
	02	258 37.2	245 50.9	19.8	133 17.7	17.1	309 18.8	56.3	316 34.8	13.9	Deneb	49 58.2	N 45 08.3				
	03	273 39.7	260 52.5	19.7	148 18.8	16.8	324 21.1	56.2	331 37.3	13.9	Denebola	183 13.6	N 14 47.3				
THURSDAY	04	288 42.2	275 54.0	19.6	163 19.9	16.5	339 23.5	56.2	346 39.8	14.0	Diphda	349 35.7	S 18 12.0				
	05	303 44.6	290 55.5	19.4	178 21.0	16.1	354 25.8	56.2	1 42.2	14.0							
	06	318 47.1	305 57.1 N	6 19.3	193 22.1 N21	15.8	9 28.1 S18	56.2	16 44.7 S20	14.0	Dubhe	194 39.8	N 61 57.8				
	07	333 49.6	320 58.6	19.2	208 23.2	15.5	24 30.5	56.1	31 47.2	14.0	El Nath	279 02.8	N 28 34.4				
	08	348 52.0	336 00.2	19.1	223 24.3	15.1	39 32.8	56.1	46 49.6	14.0	Eltanin	91 04.0	N 51 29.5				
	09	3 54.5	351 01.7	19.0	238 25.4	14.8	54 35.2	56.1	61 52.1	14.0	Enif	34 25.8	N 9 41.7				
	10	18 56.9	6 03.2	18.9	253 26.5	14.5	69 37.5	56.1	76 54.6	14.0	Fomalhaut	16 07.6	S 29 49.6				
	11	33 59.4	21 04.7	18.8	268 27.6	14.1	84 39.9	56.1	91 57.0	14.0							
	12	49 01.9	36 06.3 N	6 18.7	283 28.7 N21	13.8	99 42.2 S18	56.0	106 59.5 S20	14.0	Gacrux	172 44.4	S 56 54.0				
	13	64 04.3	51 07.8	18.6	298 29.8	13.4	114 44.6	56.0	122 02.0	14.0	Gienah	176 32.6	S 17 19.7				
	14	79 06.8	66 09.3	18.6	313 30.9	13.1	129 46.9	56.0	137 04.5	14.0	Hadar	149 43.2	S 60 11.3				
	15	94 09.3	81 10.8	18.5	328 32.0	12.8	144 49.3	56.0	152 06.9	14.0	Hamal	328 45.6	N 23 16.6				
	16	109 11.7	96 12.3	18.4	343 33.1	12.4	159 51.6	56.0	167 09.4	14.0	Kaus Aust.	84 35.8	S 34 24.1				
	17	124 14.2	111 13.8	18.3	358 34.2	12.1	174 54.0	55.9	182 11.9	14.0							
	18	139 16.7	126 15.3 N	6 18.2	13 35.3 N21	11.7	189 56.3 S18	55.9	197 14.3 S20	14.0	Kochab	137 17.2	N 74 19.0				
	19	154 19.1	141 16.9	18.1	28 36.4	11.4	204 58.7	55.9	212 16.8	14.0	Markab	14 17.7	N 14 59.6				
	20	169 21.6	156 18.4	18.0	43 37.5	11.1	220 01.0	55.9	227 19.3	14.0	Menkar	314 56.6	N 3 56.1				
	21	184 24.0	171 19.9	17.9	58 38.6	10.7	235 03.4	55.9	242 21.8	14.0	Menkent	148 53.7	S 36 10.9				
	22	199 26.5	186 21.3	17.9	73 39.7	10.4	250 05.7	55.8	257 24.2	14.0	Miaplacidus	221 48.0	S 69 33.8				
	23	214 29.0	201 22.8	17.8	88 40.8	10.0	265 08.1	55.8	272 26.7	14.1							
12	00	229 31.4	216 24.3 N	6 17.7	103 41.9 N21	09.7	280 10.4 S18	55.8	287 29.2 S20	14.1	Mirfak	309 37.3	N 49 43.3				
	01	244 33.9	231 25.8	17.6	118 43.0	09.4	295 12.8	55.8	302 31.7	14.1	Nunki	76 46.9	S 26 20.6				
	02	259 36.4	246 27.3	17.6	133 44.1	09.0	310 15.1	55.8	317 34.1	14.1	Peacock	54 21.2	S 56 51.3				
	03	274 38.8	261 28.8	17.5	148 45.2	08.7	325 17.5	55.7	332 36.6	14.1	Pollux	244 16.1	N 28 07.2				
	04	289 41.3	276 30.3	17.4	163 46.3	08.3	340 19.8	55.7	347 39.1	14.1	Procyon	245 41.1	N 5 19.4				
	05	304 43.8	291 31.7	17.4	178 47.4	08.0	355 22.2	55.7	2 41.6	14.1							
	06	319 46.2	306 33.2 N	6 17.3	193 48.5 N21	07.7	10 24.5 S18	55.7	17 44.0 S20	14.1	Rasalhague	96 42.7	N 12 35.2				
	07	334 48.7	321 34.7	17.2	208 49.6	07.3	25 26.9	55.7	32 46.5	14.1	Regulus	208 25.4	N 12 09.4				
	08	349 51.2	336 36.2	17.2	223 50.7	07.0	40 29.2	55.7	47 49.0	14.1	Rigel	281 50.2	S 8 15.0				
	09	4 53.6	351 37.6	17.1	238 51.8	06.6	55 31.6	55.6	62 51.5	14.1	Rigel Kent.	140 44.9	S 60 40.5				
FRIDAY	10	19 56.1	6 39.1	17.0	253 52.9	06.3	70 33.9	55.6	77 53.9	14.1	Sabik	102 57.5	S 15 40.6				
	11	34 58.5	21 40.6	17.0	268 54.0	05.9	85 36.3	55.6	92 56.4	14.1							
	12	50 01.0	36 42.0 N	6 16.9	283 55.1 N21	05.6	100 38.7 S18	55.6	107 58.9 S20	14.1	Schedar	350 25.9	N 56 19.2				
	13	65 03.5	51 43.5	16.9	298 56.2	05.3	115 41.0	55.6	123 01.4	14.1	Shaula	97 15.1	S 37 04.5				
	14	80 05.9	66 44.9	16.8	313 57.3	04.9	130 43.4	55.5	138 03.8	14.1	Sirius	259 08.7	S 16 40.0				
	15	95 08.4	81 46.4	16.8	328 58.4	04.6	145 45.7	55.5	153 06.3	14.1	Spica	159 12.5	S 10 57.6				
	16	110 10.9	96 47.8	16.7	343 59.5	04.2	160 48.1	55.5	168 08.8	14.1	Suhail	223 21.5	S 43 16.9				
	17	125 13.3	111 49.3	16.7	359 00.6	03.9	175 50.4	55.5	183 11.3	14.2							
	18	140 15.8	126 50.7 N	6 16.6	14 01.7 N21	03.5	190 52.8 S18	55.5	198 13.7 S20	14.2	Vega	81 05.3	N 38 44.7				
	19	155 18.3	141 52.1	16.6	29 02.8	03.2	205 55.1	55.5	213 16.2	14.2	Zuben'ubi	137 48.8	S 15 52.9				
	20	170 20.7	156 53.6	16.5	44 03.9	02.9	220 57.5	55.4	228 18.7	14.2							
	21	185 23.2	171 55.0	16.5	59 05.0	02.5	235 59.9	55.4	243 21.2	14.2		S.H.A.	Mer. Pass.				
	22	200 25.6	186 56.4	16.5	74 06.1	02.2	251 02.2	55.4	258 23.6	14.2	Venus	347 15.5	9 36				
	23	215 28.1	201 57.9	16.4	89 07.2	01.8	266 04.6	55.4	273 26.1	14.2	Mars	234 43.2	17 06				
											Jupiter	50 41.8	5 22				
Mer. Pass.		8 44.4	v 1.5 d 0.1		v 1.1 d 0.3		v 2.3 d 0.0		v 2.5 d 0.0		Saturn	57 57.6	4 53				

G.M.T.		SUN		MOON					Lat.	Twilight		Sun-rise	Moonrise						
		G.H.A.	Dec.	G.H.A.	ν	Dec.	d	H.P.		Naut.	Civil		10	11	12	13			
d	h	°	'	°	'	°	'	'	°	h	m	h	m	h	m	h	m	h	m
WEDNESDAY	00	180	54.7	N17	29.9	236	32.0	10.2	S	5	25.6	11.0	58.8	N 72	03 23	03 15	03 08	03 00	
	01	195	54.7		30.6	251	01.2	10.1		5	14.6	11.0	58.8	N 70	03 16	03 14	03 13	03 12	
	02	210	54.7		31.2	265	30.3	10.2		5	03.6	11.1	58.8	68	03 10	03 14	03 18	03 22	
	03	225	54.8		31.9	279	59.5	10.3		4	52.5	11.0	58.8	66	03 06	03 14	03 21	03 30	
	04	240	54.8		32.5	294	28.8	10.2		4	41.5	11.1	58.8	64	03 01	03 02	03 13	03 25	
	05	255	54.8		33.2	308	58.0	10.3		4	30.4	11.1	58.8	62	02 58	03 13	03 27	03 43	
	06	270	54.8	N17	33.8	323	27.3	10.3	S	4	19.3	11.2	58.8	N 58	02 52	03 12	03 32	03 53	
	07	285	54.9		34.5	337	56.6	10.3		4	08.1	11.1	58.8	56	02 50	03 12	03 34	03 55	
	08	300	54.9		35.2	352	25.9	10.4		3	57.0	11.2	58.7	54	02 48	03 12	03 36	04 01	
	09	315	54.9		35.8	365	55.3	10.4		3	45.8	11.2	58.7	52	02 46	03 12	03 37	04 04	
	10	330	54.9		36.5	379	59.5	10.4		3	34.6	11.2	58.7	50	02 44	03 12	03 39	04 07	
	11	345	55.0		37.1	393	58.0	10.4		3	23.4	11.2	58.7	45	02 40	03 11	03 42	04 14	
	12	0	55.0	N17	37.8	50	23.5	10.5	S	3	12.2	11.2	58.7	N 40	02 37	03 11	03 45	04 19	
	13	15	55.0		38.4	64	53.0	10.5		3	01.0	11.3	58.7	35	02 34	03 11	03 47	04 24	
	14	30	55.0		39.1	79	22.5	10.5		2	49.7	11.2	58.7	30	04 12	04 32	03 49	04 29	
	15	45	55.0		39.7	93	52.0	10.5		2	38.5	11.3	58.7	20	04 35	05 02	03 53	04 36	
	16	60	55.1		40.4	108	21.5	10.6		2	27.2	11.2	58.6	N 10	04 52	05 18	03 56	04 43	
17	75	55.1		41.0	122	51.1	10.6		2	16.0	11.3	58.6	0	05 06	05 31	04 00	04 49		
THURSDAY	18	90	55.1	N17	41.7	137	20.7	10.6	S	2	04.7	11.3	58.6	S 10	05 18	05 44	04 03	04 56	
	19	105	55.1		42.3	151	50.3	10.6		1	53.4	11.3	58.6	20	05 30	05 56	04 06	05 02	
	20	120	55.2		43.0	166	19.9	10.6		1	42.1	11.3	58.6	30	05 41	06 10	04 10	05 10	
	21	135	55.2		43.6	180	49.5	10.7		1	30.8	11.3	58.6	35	05 47	06 17	04 12	05 15	
	22	150	55.2		44.3	195	19.2	10.7		1	19.5	11.3	58.6	40	05 53	06 25	04 15	05 20	
	23	165	55.2		44.9	209	48.9	10.7		1	08.2	11.3	58.5	45	05 59	06 35	04 18	05 26	
	00	180	55.2	N17	45.6	224	18.6	10.7	S	0	56.9	11.3	58.5	S 50	06 06	06 45	04 21	05 33	
	01	195	55.3		46.2	238	48.3	10.7		0	45.6	11.3	58.5	52	06 09	06 50	04 23	05 36	
	02	210	55.3		46.9	253	18.0	10.8		0	34.3	11.4	58.5	54	06 13	06 56	04 25	05 40	
	03	225	55.3		47.5	267	47.8	10.7		0	22.9	11.3	58.5	56	06 16	07 02	04 27	05 44	
	04	240	55.3		48.2	282	17.5	10.8		0	11.6	11.3	58.5	58	06 20	07 08	04 29	05 49	
	05	255	55.3		48.8	296	47.3	10.8	S	0	00.3	11.3	58.5	S 60	06 24	07 15	04 31	05 54	
	06	270	55.4	N17	49.5	311	17.1	10.8	N	0	11.0	11.2	58.4	Lat.	Sun-set	Twilight	Moonset		
	07	285	55.4		50.1	325	46.9	10.8		0	22.2	11.3	58.4				10	11	
	08	300	55.4		50.8	340	16.7	10.8		0	33.5	11.3	58.4				12	13	
	09	315	55.4		51.4	354	46.5	10.9		0	44.8	11.3	58.4						
	10	330	55.4		52.0	9	16.4	10.8		0	56.1	11.2	58.4						
11	345	55.5		52.7	23	46.2	10.9		1	07.3	11.3	58.4	N 72	14 06	15 58	17 50	19 43		
12	0	55.5	N17	53.3	38	16.1	10.9	N	1	18.6	11.2	58.3	N 70	22 35	14 10	15 56	17 40		
13	15	55.5		54.0	52	46.0	10.9		1	29.8	11.2	58.3	68	21 47	14 14	15 53	17 32		
14	30	55.5		54.6	67	15.9	10.9		1	41.0	11.2	58.3	66	21 17	14 16	15 52	17 25		
15	45	55.5		55.2	81	45.8	10.9		1	52.2	11.2	58.3	64	20 54	22 23	14 19	15 50		
16	60	55.5		55.9	96	15.7	10.9		2	03.4	11.2	58.3	62	20 37	21 47	14 21	15 49		
17	75	55.6		56.5	110	45.6	10.9		2	14.6	11.2	58.3	60	20 22	21 22	14 23	15 47		
18	90	55.6	N17	57.2	125	15.5	11.0	N	2	25.8	11.1	58.2	N 58	20 09	21 03	22 32	14 24		
19	105	55.6		57.8	139	45.5	10.9		2	36.9	11.1	58.2	56	19 59	20 47	22 00	14 26		
20	120	55.6		58.4	154	15.4	10.9		2	48.0	11.1	58.2	54	19 49	20 34	21 36	14 27		
21	135	55.6		59.1	168	45.3	11.0		2	59.1	11.1	58.2	52	19 41	20 22	21 18	14 28		
22	150	55.6		59.7	183	15.3	11.0		3	10.2	11.0	58.2	50	19 33	20 12	21 03	14 29		
23	165	55.6	18	00.3	197	45.3	10.9		3	21.2	11.1	58.2	45	19 17	19 51	20 34	14 32		
FRIDAY	00	180	55.7	N18	01.0	212	15.2	11.0	N	3	32.3	11.0	58.1	N 40	19 04	19 35	20 12	14 34	
	01	195	55.7		01.6	226	4.5	11.0		3	43.3	11.0	58.1	35	18 53	19 21	19 55	14 35	
	02	210	55.7		02.2	241	15.2	10.9		3	54.3	10.9	58.1	30	18 44	19 10	19 41	14 37	
	03	225	55.7		02.9	255	45.1	11.0		4	05.2	10.9	58.1	20	18 27	18 51	19 18	14 39	
	04	240	55.7		03.5	270	15.1	11.0		4	16.1	10.9	58.1	N 10	18 13	18 35	19 01	14 41	
	05	255	55.7		04.1	284	45.1	11.0		4	27.0	10.9	58.1	0	18 00	18 22	18 47	14 43	
	06	270	55.7	N18	04.8	299	15.1	11.0	N	4	37.9	10.8	58.0	S 10	17 47	18 09	18 34	14 45	
	07	285	55.8		05.4	313	45.1	11.0		4	48.7	10.9	58.0	20	17 33	17 56	18 23	14 47	
	08	300	55.8		06.0	328	15.1	11.0		4	59.6	10.7	58.0	30	17 17	17 43	18 11	14 50	
	09	315	55.8		06.7	342	45.1	11.0		5	10.3	10.8	58.0	35	17 08	17 35	18 05	14 51	
	10	330	55.8		07.3	357	15.1	10.9		5	21.1	10.7	58.0	40	16 58	17 27	17 59	14 52	
	11	345	55.8		07.9	11	45.0	11.0		5	31.8	10.7	57.9	45	16 46	17 18	17 53	14 54	
	12	0	55.8	N18	08.6	26	15.0	11.0	N	5	42.5	10.6	57.9	S 50	16 31	17 07	17 46	14 56	
	13	15	55.8		09.2	40	45.0	11.0		5	53.1	10.6	57.9	52	16 25	17 02	17 43	14 57	
	14	30	55.8		09.8	55	15.0	11.0		6	03.7	10.5	57.9	54	16 17	16 56	17 39	14 58	
	15	45	55.8		10.4	69	45.0	11.0		6	14.2	10.6	57.9	56	16 09	16 50	17 36	14 59	
	16	60	55.9		11.1	84	15.0	11.0		6	24.8	10.4	57.8	58	15 59	16 44	17 32	15 00	
17	75	55.9		11.7	98	45.0	11.0		6	35.2	10.5	57.8	S 60	15 48	16 37	17 28	15 02		
18	90	55.9	N18	12.3	113	15.0	10.9	N	6	45.7	10.4	57.8	Day	SUN	MOON				
19	105	55.9		13.0	127	14.9	11.0		6	56.1	10.3	57.8		Eqn. of Time	Mer. Pass.	Mer. Upper	Pass. Lower		
20	120	55.9		13.6	142	14.9	11.0		7	06.4	10.3	57.8		00h	12h		Age		
21	135	55.9		14.2	156	44.9	11.0		7	16.7	10.3	57.7		m s	m s	h m	d		

G.M.T.	ARIES			VENUS -4.2			MARS +1.5			JUPITER -2.0			SATURN +0.7			STARS		
	G.H.A.	G.H.A.	Dec.	G.H.A.	G.H.A.	Dec.	G.H.A.	G.H.A.	Dec.	G.H.A.	G.H.A.	Dec.	G.H.A.	G.H.A.	Dec.	Name	S.H.A.	Dec.
d h	° ' "	° ' "	° ' "	° ' "	° ' "	° ' "	° ' "	° ' "	° ' "	° ' "	° ' "	° ' "	° ' "	° ' "	° ' "		° ' "	° ' "
13	00	230 30.6	216 59.3 N	6 16.4	104 08.3	N 21 01.5	281 06.9	S 18 55.4	288 28.6	S 20 14.2	Acamar	315 48.7	S 40 27.7					
01	01	245 33.0	232 00.7	16.4	119 09.4	01.1	296 09.3	55.3	303 31.1	14.2	Achernar	335 56.6	S 57 26.0					
02	02	260 35.5	247 02.2	16.3	134 10.5	00.8	311 11.7	55.3	318 33.5	14.2	Acrux	173 52.8	S 62 53.3					
03	03	275 38.0	262 03.6	16.3	149 11.6	00.4	326 14.0	55.3	333 36.0	14.2	Adhara	255 43.7	S 28 55.4					
04	04	290 40.4	277 05.0	16.3	164 12.7	21 00.1	341 16.4	55.3	348 38.5	14.2	Aldebaran	291 35.0	N 16 25.8					
05	05	305 42.9	292 06.4	16.2	179 13.8	20 59.7	356 18.7	55.3	3 41.0	14.2								
06	06	320 45.4	307 07.8	N 6 16.2	194 14.9	N 20 59.4	11 21.1	S 18 55.3	18 43.5	S 20 14.2	Alioth	166 54.9	N 56 10.4					
07	07	335 47.8	322 09.2	16.2	209 16.0	59.1	26 23.5	55.2	33 45.9	14.2	Alkaid	153 29.5	N 49 30.5					
08	08	350 50.3	337 10.6	16.2	224 17.1	58.7	41 25.8	55.2	48 48.4	14.2	Al Na'ir	28 33.3	S 47 08.7					
09	09	5 52.8	352 12.0	16.1	239 18.2	58.4	56 28.2	55.2	63 50.9	14.3	Alnilam	276 26.7	S 1 13.7					
10	10	20 55.2	7 13.4	16.1	254 19.3	58.0	71 30.5	55.2	78 53.4	14.3	Alphard	218 34.8	S 8 29.6					
11	11	35 57.7	22 14.8	16.1	269 20.4	57.7	86 32.9	55.2	93 55.9	14.3								
12	12	51 00.1	37 16.2	N 6 16.1	284 21.5	N 20 57.3	101 35.3	S 18 55.2	108 58.3	S 20 14.3	Alphecca	126 44.0	N 26 50.7					
13	13	66 02.6	52 17.6	16.1	299 22.6	57.0	116 37.6	55.1	124 00.8	14.3	Alpheratz	358 24.5	N 28 52.4					
14	14	81 05.1	67 19.0	16.1	314 23.7	56.6	131 40.0	55.1	139 03.3	14.3	Altair	62 46.5	N 8 45.9					
15	15	96 07.5	82 20.4	16.0	329 24.8	56.3	146 42.4	55.1	154 05.8	14.3	Ankaa	353 54.9	S 42 30.9					
16	16	111 10.0	97 21.8	16.0	344 25.9	55.9	161 44.7	55.1	169 08.3	14.3	Antares	113 14.3	S 26 20.8					
17	17	126 12.5	112 23.2	16.0	359 27.0	55.6	176 47.1	55.1	184 10.7	14.3								
18	18	141 14.9	127 24.6	N 6 16.0	14 28.1	N 20 55.2	191 49.5	S 18 55.1	199 13.2	S 20 14.3	Arcturus	146 31.4	N 19 23.1					
19	19	156 17.4	142 25.9	16.0	29 29.2	54.9	206 51.8	55.0	214 15.7	14.3	Atria	108 51.0	S 68 57.3					
20	20	171 19.9	157 27.3	16.0	44 30.2	54.5	221 54.2	55.0	229 18.2	14.3	Avior	234 34.3	S 59 23.4					
21	21	186 22.3	172 28.7	16.0	59 31.3	54.2	236 56.6	55.0	244 20.7	14.3	Bellatrix	279 14.6	N 6 18.8					
22	22	201 24.8	187 30.1	16.0	74 32.4	53.8	251 58.9	55.0	259 23.1	14.3	Betelgeuse	271 44.2	N 7 23.9					
23	23	216 27.3	202 31.4	16.0	89 33.5	53.5	267 01.3	55.0	274 25.6	14.4								
14	00	231 29.7	217 32.8	N 6 16.0	104 34.6	N 20 53.1	282 03.7	S 18 55.0	289 28.1	S 20 14.4	Canopus	264 14.1	S 52 40.8					
01	01	246 32.2	232 34.2	16.0	119 35.7	52.8	297 06.0	54.9	304 30.6	14.4	Capella	281 33.1	N 45 57.5					
02	02	261 34.6	247 35.5	16.0	134 36.8	52.4	312 08.4	54.9	319 33.1	14.4	Deneb	49 58.2	N 45 08.3					
03	03	276 37.1	262 36.9	16.0	149 37.9	52.1	327 10.8	54.9	334 35.6	14.4	Denebola	183 13.7	N 14 47.9					
04	04	291 39.6	277 38.2	16.0	164 39.0	51.7	342 13.1	54.9	349 38.0	14.4	Diphda	349 35.7	S 18 12.0					
05	05	306 42.0	292 39.6	16.0	179 40.1	51.4	357 15.5	54.9	4 40.5	14.4								
06	06	321 44.5	307 40.9	N 6 16.1	194 41.2	N 20 51.0	12 17.9	S 18 54.9	19 43.0	S 20 14.4	Dubhe	194 39.8	N 61 57.8					
07	07	336 47.0	322 42.3	16.1	209 42.3	50.7	27 20.2	54.9	34 45.5	14.4	Elnath	279 02.8	N 28 34.4					
08	08	351 49.4	337 43.6	16.1	224 43.4	50.3	42 22.6	54.8	49 48.0	14.4	Eltanin	91 04.0	N 51 29.5					
09	09	6 51.9	352 45.0	16.1	239 44.5	50.0	57 25.0	54.8	64 50.4	14.4	Enif	34 25.8	N 9 41.7					
10	10	21 54.4	7 46.3	16.1	254 45.6	49.6	72 27.3	54.8	79 52.9	14.4	Fomalhaut	16 07.5	S 29 49.6					
11	11	36 56.8	22 47.7	16.1	269 46.7	49.3	87 29.7	54.8	94 55.4	14.4								
12	12	51 59.3	37 49.0	N 6 16.2	284 47.8	N 20 48.9	102 32.1	S 18 54.8	109 57.9	S 20 14.4	Gacrux	172 44.4	S 56 54.0					
13	13	67 01.8	52 50.3	16.2	299 48.9	48.6	117 34.5	54.8	125 00.4	14.5	Gienah	176 32.6	S 17 19.7					
14	14	82 04.2	67 51.7	16.2	314 50.0	48.2	132 36.8	54.8	140 02.9	14.5	Hadar	149 43.2	S 60 11.3					
15	15	97 06.7	82 53.0	16.2	329 51.1	47.9	147 39.2	54.7	155 05.3	14.5	Hamal	328 45.6	N 23 16.6					
16	16	112 09.1	97 54.3	16.3	344 52.2	47.5	162 41.6	54.7	170 07.8	14.5	Kaus Aust.	84 35.8	S 34 24.1					
17	17	127 11.6	112 55.7	16.3	359 53.3	47.1	177 43.9	54.7	185 10.3	14.5								
18	18	142 14.1	127 57.0	N 6 16.3	14 54.3	N 20 46.8	192 46.3	S 18 54.7	200 12.8	S 20 14.5	Kochab	137 17.2	N 74 19.0					
19	19	157 16.5	142 58.3	16.4	29 55.4	46.4	207 48.7	54.7	215 15.3	14.5	Markab	14 17.7	N 14 59.6					
20	20	172 19.0	157 59.6	16.4	44 56.5	46.1	222 51.1	54.7	230 17.8	14.5	Menkar	314 56.6	N 3 56.1					
21	21	187 21.5	173 00.9	16.4	59 57.6	45.7	237 53.4	54.7	245 20.3	14.5	Menkent	148 53.7	S 36 10.9					
22	22	202 23.9	188 02.2	16.5	74 58.7	45.4	252 55.8	54.6	260 22.7	14.5	Miaplacidus	221 48.1	S 69 33.8					
23	23	217 26.4	203 03.5	16.5	89 59.8	45.0	267 58.2	54.6	275 25.2	14.5								
15	00	232 28.9	218 04.9	N 6 16.5	105 00.9	N 20 44.7	283 00.6	S 18 54.6	290 27.7	S 20 14.5	Mirfak	309 37.3	N 49 43.3					
01	01	247 31.3	233 06.2	16.6	120 02.0	44.3	298 02.9	54.6	305 30.2	14.6	Nunki	76 46.9	S 26 20.6					
02	02	262 33.8	248 07.5	16.6	135 03.1	44.0	313 05.3	54.6	320 32.7	14.6	Peacock	54 21.1	S 56 51.3					
03	03	277 36.2	263 08.8	16.7	150 04.2	43.6	328 07.7	54.6	335 35.2	14.6	Pollux	244 16.1	N 28 07.2					
04	04	292 38.7	278 10.1	16.7	165 05.3	43.2	343 10.1	54.6	350 37.7	14.6	Procyon	245 41.1	N 5 19.4					
05	05	307 41.2	293 11.4	16.8	180 06.4	42.9	358 12.4	54.5	5 40.1	14.6								
06	06	322 43.6	308 12.7	N 6 16.8	195 07.5	N 20 42.5	13 14.8	S 18 54.5	20 42.6	S 20 14.6	Rasalhague	96 42.7	N 12 35.2					
07	07	337 46.1	323 13.9	16.9	210 08.6	42.2	28 17.2	54.5	35 45.1	14.6	Regulus	208 25.2	N 12 09.4					
08	08	352 48.6	338 15.2	16.9	225 09.7	41.8	43 19.6	54.5	50 47.6	14.6	Rigel	281 50.2	S 8 14.9					
09	09	7 51.0	353 16.5	17.0	240 10.8	41.5	58 22.0	54.5	65 50.1	14.6	Rigel Kent.	140 44.9	S 60 40.6					
10	10	22 53.5	8 17.8	17.0	255 11.8	41.1	73 24.3	54.5	80 52.6	14.6	Sabik	102 57.4	S 15 40.6					
11	11	37 56.0	23 19.1	17.1	270 12.9	40.7	88 26.7	54.5	95 55.1	14.6								
12	12	52 58.4	38 20.4	N 6 17.1	285 14.0	N 20 40.4	103 29.1	S 18 54.5	110 57.6	S 20 14.6	Schedar	350 25.8	N 56 19.2					
13	13	68 00.9	53 21.6	17.2	300 15.1	40.0	118 31.5	54.4	126 00.0	14.7	Shaula	97 15.1	S 37 04.5					
14	14	83 03.4	68 22.9	17.3	315 16.2	39.7	133 33.8	54.4	141 02.5	14.7	Sirius	259 08.7	S 16 40.0					
15	15	98 05.8	83 24.2	17.3	330 17.3	39.3	148 36.2	54.4	156 05.0	14.7	Spica	159 12.5	S 10 57.6					
16	16	113 08.3	98 25.5	17.4	345 18.4	39.0	163 38.6	54.4	171 07.5	14.7	Suhail	223 21.5	S 43 16.9					
17	17	128 10.7	113 26.7	17.5	0 19.5	38.6	178 41.0	54.4	186 10.0	14.7								
18	18	143 13.2	128 28.0	N 6 17.5	15 20.6	N 20 38.2	193 43.4	S 18 54.4	201 12.5	S 20 14.7	Vega	81 05.3	N 38 44.7					
19	19	158 15.7	143 29.3	17.6	30 21.7	37.9	208 45.8	54.4	216 15.0	14.7	Zuben'ubi	137 48.8	S 15 52.9					
20	20	173 18.1	158 30.5	17.7	45 22.8	37.5	223 48.											

G.M.T.	SUN		MOON						Lat.	Twilight		Sun-rise	Moonrise							
	G.H.A.		Dec.	v	d	H.P.	Naut.	Civil		13	14		15	16						
	°	'										°			'	°	'	h	m	h
1300	180	55.9	N18	16.1	200	14.8	11.0	N	7	47.4	10.1	57.7	03	00	02	52	02	40	02	21
01	195	55.9		16.7	214	44.8	10.9		7	57.5	10.1	57.7	03	12	03	12	03	13	03	17
02	210	55.9		17.3	229	14.7	10.9		8	07.6	10.0	57.6	03	22	03	28	03	36	03	51
03	225	56.0		17.9	243	44.6	11.0		8	17.6	10.0	57.6	03	30	03	41	03	55	04	15
04	240	56.0		18.6	258	14.6	10.9		8	27.6	9.9	57.6	03	37	03	51	04	10	04	34
05	255	56.0		19.2	272	44.5	11.0		8	37.5	9.9	57.6	03	43	04	01	04	22	04	50
06	270	56.0	N18	19.8	287	14.5	10.9	N	8	47.4	9.8	57.6	03	48	04	09	04	33	05	03
07	285	56.0		20.4	301	44.4	10.9		8	57.2	9.8	57.5	03	53	04	16	04	43	05	15
08	300	56.0		21.0	316	14.3	10.9		9	07.0	9.7	57.5	03	57	04	22	04	51	05	29
09	315	56.0		21.7	330	44.2	10.9		9	16.7	9.7	57.5	04	01	04	28	04	58	05	33
10	330	56.0		22.3	345	14.1	10.9		9	26.4	9.6	57.5	04	04	04	33	05	05	05	47
11	345	56.0		22.9	359	44.0	10.9		9	36.0	9.5	57.5	04	07	04	37	05	11	05	48
12	0	56.0	N18	23.5	14	13.9	10.9	N	9	45.5	9.5	57.4	04	14	04	47	05	24	06	04
13	15	56.0		24.1	28	43.8	10.8		9	55.0	9.4	57.4	04	19	04	56	05	34	06	16
14	30	56.0		24.7	43	13.6	10.9		10	04.4	9.4	57.4	04	24	05	03	05	43	06	27
15	45	56.0		25.4	57	43.5	10.9		10	13.8	9.3	57.4	04	29	05	09	05	51	06	36
16	60	56.0		26.0	72	13.4	10.8		10	23.1	9.2	57.3	04	36	05	20	06	05	06	52
17	75	56.0		26.6	86	43.2	10.9		10	32.3	9.2	57.3	04	43	05	30	06	18	07	06
18	90	56.0	N18	27.2	101	13.1	10.8	N	10	41.5	9.1	57.3	04	49	05	39	06	29	07	20
19	105	56.0		27.8	115	42.9	10.8		10	50.6	9.1	57.3	05	02	05	58	06	53	07	48
20	120	56.1		28.4	130	12.7	10.8		10	59.7	9.0	57.3	05	09	06	10	07	08	08	04
21	135	56.1		29.0	144	42.5	10.8		11	08.7	8.9	57.2	05	15	06	16	07	16	08	13
22	150	56.1		29.6	159	12.3	10.8		11	17.6	8.9	57.2	05	20	06	23	07	25	08	24
23	165	56.1		30.3	173	42.1	10.8		11	26.5	8.8	57.2	05	26	06	32	07	37	08	37
1400	180	56.1	N18	30.9	188	11.9	10.8	N	11	35.3	8.7	57.2	05	33	06	43	07	50	08	53
01	195	56.1		31.5	202	41.7	10.8		11	44.0	8.7	57.1	05	39	06	53	08	03	09	09
02	210	56.1		32.1	217	11.5	10.7		11	52.7	8.5	57.1	05	46	07	04	08	11	09	18
03	225	56.1		32.7	231	41.2	10.8		12	01.2	8.6	57.1	05	54	07	14	08	20	09	28
04	240	56.1		33.3	246	11.0	10.7		12	09.8	8.4	57.1	06	02	07	21	08	30	09	40
05	255	56.1		33.9	260	40.7	10.8		12	18.2	8.4	57.0	06	10	07	28	08	39	10	00
06	270	56.1	N18	34.5	275	10.5	10.7	N	12	26.6	8.3	57.0	06	18	07	36	08	48	10	10
07	285	56.1		35.1	289	40.2	10.7		12	34.9	8.2	57.0	06	26	07	44	08	57	10	20
08	300	56.1		35.7	304	09.9	10.7		12	43.1	8.2	57.0	06	34	07	52	09	06	10	30
09	315	56.1		36.3	318	39.6	10.7		12	51.3	8.1	57.0	06	42	08	00	09	15	10	40
10	330	56.1		36.9	333	09.3	10.7		12	59.4	8.0	56.9	06	50	08	08	09	24	10	50
11	345	56.1		37.5	347	39.0	10.7		13	07.4	7.9	56.9	07	00	08	16	09	33	11	00
12	0	56.1	N18	38.1	2	08.7	10.6	N	13	15.3	7.9	56.9	07	08	08	24	09	42	11	10
13	15	56.1		38.7	16	38.3	10.7		13	23.2	7.8	56.9	07	16	08	32	09	51	11	20
14	30	56.1		39.3	31	08.0	10.7		13	31.0	7.7	56.8	07	24	08	40	10	00	11	30
15	45	56.1		39.9	45	37.7	10.6		13	38.7	7.6	56.8	07	32	08	48	10	09	11	40
16	60	56.1		40.5	60	07.3	10.7		13	46.3	7.6	56.8	07	40	08	56	10	18	11	50
17	75	56.1		41.1	74	37.0	10.6		13	53.9	7.5	56.8	07	48	09	04	10	26	12	00
18	90	56.1	N18	41.7	89	06.6	10.6	N	14	01.4	7.4	56.7	07	56	09	12	10	34	12	10
19	105	56.1		42.3	103	36.2	10.6		14	08.8	7.3	56.7	08	04	09	20	11	42	12	20
20	120	56.1		42.9	118	05.8	10.6		14	16.1	7.2	56.7	08	12	09	28	11	50	12	30
21	135	56.1		43.5	132	35.4	10.6		14	23.3	7.2	56.7	08	20	09	36	12	00	12	40
22	150	56.1		44.1	147	05.0	10.6		14	30.5	7.0	56.7	08	28	09	44	12	08	12	50
23	165	56.0		44.7	161	34.6	10.6		14	37.5	7.0	56.6	08	36	09	52	12	16	12	00
1500	180	56.0	N18	45.3	176	04.2	10.6	N	14	44.5	6.9	56.6	08	44	10	00	12	24	12	10
01	195	56.0		45.9	190	33.8	10.5		14	51.4	6.8	56.6	08	52	10	08	12	32	12	20
02	210	56.0		46.5	205	03.3	10.6		14	58.2	6.8	56.6	08	59	10	16	12	40	12	30
03	225	56.0		47.1	219	32.9	10.6		15	05.0	6.6	56.5	09	07	10	24	12	48	12	40
04	240	56.0		47.7	234	02.5	10.5		15	11.6	6.6	56.5	09	15	10	32	12	56	12	50
05	255	56.0		48.3	248	32.0	10.6		15	18.2	6.5	56.5	09	23	10	40	13	04	12	00
06	270	56.0	N18	48.9	263	01.6	10.5	N	15	24.7	6.4	56.5	09	31	10	48	13	12	12	10
07	285	56.0		49.5	277	31.1	10.5		15	31.1	6.3	56.4	09	39	10	56	13	20	12	20
08	300	56.0		50.1	292	00.6	10.6		15	37.4	6.2	56.4	09	47	10	04	13	28	12	30
09	315	56.0		50.7	306	30.2	10.5		15	43.6	6.2	56.4	09	55	10	12	13	36	12	40
10	330	56.0		51.3	320	59.7	10.5		15	49.8	6.0	56.4	09	03	10	20	13	44	12	50
11	345	56.0		51.9	335	29.2	10.5		15	55.8	6.0	56.3	09	11	10	28	13	52	12	00
12	0	56.0	N18	52.4	349	58.7	10.5	N	16	01.8	5.8	56.3	09	19	10	36	14	00	12	10
13	15	56.0		53.0	4	28.2	10.6		16	07.6	5.8	56.3	09	27	10	44	14	08	12	20
14	30	56.0		53.6	18	57.8	10.5		16	13.4	5.7	56.3	09	35	10	52	14	16	12	30
15	45	56.0		54.2	33	27.3	10.5		16	19.1	5.6	56.2	09	43	10	00	14	24	12	40

G.M.T.	ARIES			VENUS -4.2			MARS +1.5			JUPITER -2.0			SATURN +0.7			STARS		
	G.H.A.	G.H.A.	Dec.	G.H.A.	G.H.A.	Dec.	G.H.A.	G.H.A.	Dec.	G.H.A.	G.H.A.	Dec.	G.H.A.	G.H.A.	Dec.	Name	S.H.A.	Dec.
d h	° ' "	° ' "	° ' "	° ' "	° ' "	° ' "	° ' "	° ' "	° ' "	° ' "	° ' "	° ' "	° ' "	° ' "	° ' "	° ' "	° ' "	° ' "
TUESDAY																		
16 00	233 28.0	218 35.5 N	6 18.0	105 27.2	N20 36.1		283 57.7	S18 54.3		291 27.4	S20 14.7		Acamar	315 48.7	S 40 27.7			
01	248 30.5	233 36.8	18.0	120 28.2	35.7		299 00.0	54.3		306 29.9	14.8		Achernar	335 56.6	S 57 25.9			
02	263 32.9	248 38.0	18.1	135 29.3	35.4		314 02.4	54.3		321 32.4	14.8		Acrux	173 52.8	S 62 53.3			
03	278 35.4	263 39.3	18.2	150 30.4	35.0		329 04.8	54.3		336 34.9	14.8		Adhara	255 43.7	S 28 55.4			
04	293 37.9	278 40.5	18.3	165 31.5	34.6		344 07.2	54.3		351 37.4	14.8		Aldebaran	291 35.0	N 16 25.8			
05	308 40.3	293 41.8	18.4	180 32.6	34.3		359 09.6	54.2		6 39.9	14.8							
06	323 42.8	308 43.0 N	6 18.4	195 33.7	N20 33.9		14 12.0	S18 54.2		21 42.4	S20 14.8		Alioth	166 54.9	N 56 10.4			
07	338 45.2	323 44.2	18.5	210 34.8	33.6		29 14.4	54.2		36 44.9	14.8		Alkaid	153 29.5	N 49 30.5			
08	353 47.7	338 45.5	18.6	225 35.9	33.2		44 16.7	54.2		51 47.3	14.8		Al Na'ir	28 33.2	S 47 08.7			
09	8 50.2	353 46.7	18.7	240 37.0	32.8		59 19.1	54.2		66 49.8	14.8		Alnilam	276 26.7	S 1 13.7			
10	23 52.6	8 47.9	18.8	255 38.1	32.5		74 21.5	54.2		81 52.3	14.8		Alphard	218 34.8	S 8 29.6			
11	38 55.1	23 49.2	18.9	270 39.2	32.1		89 23.9	54.2		96 54.8	14.9							
12	53 57.6	38 50.4 N	6 19.0	285 40.3	N20 31.8		104 26.3	S18 54.2		111 57.3	S20 14.9		Alphecca	126 44.0	N 26 50.7			
13	69 00.0	53 51.6	19.1	300 41.3	31.4		119 28.7	54.2		126 59.8	14.9		Alpheratz	358 24.5	N 28 52.4			
14	84 02.5	68 52.8	19.2	315 42.4	31.0		134 31.1	54.2		142 02.3	14.9		Altair	62 46.5	N 8 45.9			
15	99 05.0	83 54.0	19.3	330 43.5	30.7		149 33.4	54.1		157 04.8	14.9		Ankaa	353 54.9	S 42 30.9			
16	114 07.4	98 55.3	19.4	345 44.6	30.3		164 35.8	54.1		172 07.3	14.9		Antares	113 14.3	S 26 20.8			
17	129 09.9	113 56.5	19.5	0 45.7	29.9		179 38.2	54.1		187 09.8	14.9							
18	144 12.3	128 57.7 N	6 19.6	15 46.8	N20 29.6		194 40.6	S18 54.1		202 12.3	S20 14.9		Arcturus	146 31.4	N 19 23.1			
19	159 14.8	143 58.9	19.7	30 47.9	29.2		209 43.0	54.1		217 14.8	14.9		Atria	108 50.9	S 68 57.4			
20	174 17.3	159 00.1	19.8	45 49.0	28.8		224 45.4	54.1		232 17.3	14.9		Avior	234 34.3	S 59 23.4			
21	189 19.7	174 01.3	19.9	60 50.1	28.5		239 47.8	54.1		247 19.7	14.9		Bellatrix	279 14.6	N 6 18.8			
22	204 22.2	189 02.5	20.0	75 51.2	28.1		254 50.2	54.1		262 22.2	15.0		Betelgeuse	271 44.2	N 7 23.9			
23	219 24.7	204 03.7	20.1	90 52.2	27.8		269 52.6	54.1		277 24.7	15.0							
WEDNESDAY																		
17 00	234 27.1	219 04.9 N	6 20.2	105 53.3	N20 27.4		284 55.0	S18 54.1		292 27.2	S20 15.0		Canopus	264 14.1	S 52 40.8			
01	249 29.6	234 06.1	20.3	120 54.4	27.0		299 57.3	54.0		307 29.7	15.0		Capella	281 33.1	N 45 57.5			
02	264 32.1	249 07.3	20.5	135 55.5	26.7		314 59.7	54.0		322 32.2	15.0		Deneb	49 58.2	N 45 08.3			
03	279 34.5	264 08.5	20.6	150 56.6	26.3		330 02.1	54.0		337 34.7	15.0		Denebola	183 13.7	N 14 47.3			
04	294 37.0	279 09.7	20.7	165 57.7	25.9		345 04.5	54.0		352 37.2	15.0		Diphda	349 35.6	S 18 12.0			
05	309 39.5	294 10.9	20.8	180 58.8	25.6		0 06.9	54.0		7 39.7	15.0							
06	324 41.9	309 12.0 N	6 20.9	195 59.9	N20 25.2		15 09.3	S18 54.0		22 42.2	S20 15.0		Dubhe	194 39.8	N 61 57.9			
07	339 44.4	324 13.2	21.0	211 01.0	24.8		30 11.7	54.0		37 44.7	15.0		Elnath	279 02.8	N 28 34.4			
08	354 46.8	339 14.4	21.2	226 02.1	24.5		45 14.1	54.0		52 47.2	15.1		Eltanin	91 04.0	N 51 29.5			
09	9 49.3	354 15.6	21.3	241 03.1	24.1		60 16.5	54.0		67 49.7	15.1		Enif	34 25.8	N 9 41.7			
10	24 51.8	9 16.8	21.4	256 04.2	23.7		75 18.9	54.0		82 52.2	15.1		Fomalhaut	16 07.5	S 29 49.6			
11	39 54.2	24 17.9	21.5	271 05.3	23.4		90 21.3	54.0		97 54.7	15.1							
12	54 56.7	39 19.1 N	6 21.7	286 06.4	N20 23.0		105 23.7	S18 53.9		112 57.2	S20 15.1		Gacrux	172 44.4	S 56 54.0			
13	69 59.2	54 20.3	21.8	301 07.5	22.6		120 26.1	53.9		127 59.7	15.1		Gienah	176 32.7	S 17 19.7			
14	85 01.6	69 21.4	21.9	316 08.6	22.3		135 28.5	53.9		143 02.2	15.1		Hadar	149 43.3	S 60 11.3			
15	100 04.1	84 22.6	22.1	331 09.7	21.9		150 30.9	53.9		158 04.7	15.1		Hamal	328 45.6	N 23 16.6			
16	115 06.6	99 23.8	22.2	346 10.8	21.5		165 33.3	53.9		173 07.2	15.1		Kaus Aust.	84 35.7	S 34 24.1			
17	130 09.0	114 24.9	22.3	1 11.9	21.2		180 35.7	53.9		188 09.7	15.2							
18	145 11.5	129 26.1 N	6 22.5	16 13.0	N20 20.8		195 38.0	S18 53.9		203 12.2	S20 15.2		Kochab	137 17.2	N 74 19.0			
19	160 14.0	144 27.2	22.6	31 14.0	20.4		210 40.4	53.9		218 14.7	15.2		Markab	14 17.7	N 14 59.6			
20	175 16.4	159 28.4	22.7	46 15.1	20.1		225 42.8	53.9		233 17.2	15.2		Menkar	314 56.6	N 3 56.1			
21	190 18.9	174 29.5	22.9	61 16.2	19.7		240 45.2	53.9		248 19.6	15.2		Menkent	148 53.7	S 36 10.9			
22	205 21.3	189 30.7	23.0	76 17.3	19.3		255 47.6	53.9		263 22.1	15.2		Miaplacidus	221 48.1	S 69 33.8			
23	220 23.8	204 31.8	23.2	91 18.4	18.9		270 50.0	53.9		278 24.6	15.2							
THURSDAY																		
18 00	235 26.3	219 33.0 N	6 23.3	106 19.5	N20 18.6		285 52.4	S18 53.8		293 27.1	S20 15.2		Mirfak	309 37.3	N 49 43.3			
01	250 28.7	234 34.1	23.5	121 20.6	18.2		300 54.8	53.8		308 29.6	15.2		Nunki	76 46.9	S 26 20.6			
02	265 31.2	249 35.3	23.6	136 21.7	17.8		315 57.2	53.8		323 32.1	15.2		Peacock	54 21.1	S 56 51.3			
03	280 33.7	264 36.4	23.8	151 22.8	17.5		330 59.6	53.8		338 34.6	15.3		Pollux	244 16.1	N 28 07.2			
04	295 36.1	279 37.5	23.9	166 23.8	17.1		346 02.0	53.8		353 37.1	15.3		Procyon	245 41.2	N 5 19.4			
05	310 38.6	294 38.7	24.1	181 24.9	16.7		1 04.4	53.8		8 39.6	15.3							
06	325 41.1	309 39.8 N	6 24.2	196 26.0	N20 16.4		16 06.8	S18 53.8		23 42.1	S20 15.3		Rasalhague	96 42.7	N 12 35.2			
07	340 43.5	324 40.9	24.4	211 27.1	16.0		31 09.2	53.8		38 44.6	15.3		Regulus	208 25.4	N 12 09.4			
08	355 46.0	339 42.1	24.5	226 28.2	15.6		46 11.6	53.8		53 47.1	15.3		Rigel	281 50.2	S 8 14.9			
09	10 48.5	354 43.2	24.7	241 29.3	15.2		61 14.0	53.8		68 49.6	15.3		Rigel Kent.	140 44.9	S 60 40.6			
10	25 50.9	9 44.3	24.8	256 30.4	14.9		76 16.4	53.8		83 52.1	15.3		Sabik	102 57.4	S 15 40.6			
11	40 53.4	24 45.4	25.0	271 31.5	14.5		91 18.8	53.8		98 54.6	15.3							
12	55 55.8	39 46.6 N	6 25.2	286 32.5	N20 14.1		106 21.3	S18 53.8		113 57.1	S20 15.4		Schedar	350 25.8	N 56 19.2			
13	70 58.3	54 47.7	25.3	301 33.6	13.8		121 23.7	53.8		128 59.6	15.4		Shaula	97 15.1	S 37 04.5			
14	86 00.8	69 48.8	25.5	316 34.7	13.4		136 26.1	53.7		144 02.1	15.4		Sirius	259 08.7	S 16 40.7			
15	101 03.2	84 49.9	25.7	331 35.8	13.0		151 28.5	53.7		159 04.6	15.4		Spica	159 12.5	S 10 57.6			
16	116 05.7	99 51.0	25.8	346 36.9	12.6		166 30.9	53.7		174 07.1	15.4		Suhail	223 21.5	S 43 16.9			
17	131 08.2	114 52.1	26.0	1 38.0	12.3		181 33.3	53.7		189 09.6	15.4							
18	146 10.6	129 53.2 N	6 26.2	16 39.1	N20 11.9		196 35.7	S18 53.7		204 12.1	S20 15.4		Vega	81 05.3	N 38 44.7			
19	161 13.1	144 54.3	26.3	31 40.2	11.5		211 38.1	53.7		219 14.6	15.4		Zuben'ubi	137 48.8	S 15 52.9			
20	176 15.6	159 55.4	26.5	46 41.2														

G.M.T.	SUN		MOON					Lat.	Twilight		Sun-rise	Moonrise			
	G.H.A.	Dec.	G.H.A.	φ	Dec.	d	H.P.		Naut.	Civil		16	17	18	19
d h	°	°	°	'	°	'	'	°	h m	h m	h m	h m	h m	h m	h m
16 00	180 55.9	N18 59.5	163 52.7	10.5	N17 06.3	4.8	56.0	N 72	□	□	□	02 21	□	□	□
01	195 55.9	19 00.1	178 22.2	10.5	17 11.1	4.7	56.0	N 70	□	□	□	03 17	03 29	04 03	05 11
02	210 55.9	00.7	192 51.7	10.5	17 15.8	4.6	56.0	68	///	///	01 37	03 51	04 15	04 57	05 57
03	225 55.9	01.2	207 21.2	10.5	17 20.4	4.5	56.0	66	///	///	02 15	04 15	04 45	05 29	06 27
04	240 55.9	01.8	221 50.7	10.5	17 24.9	4.4	55.9	64	///	00 54	02 42	04 34	05 08	05 53	06 50
05	255 55.8	02.4	236 20.2	10.5	17 29.3	4.3	55.9	62	///	01 44	03 02	04 50	05 26	06 12	07 08
06	270 55.8	N19 03.0	250 49.7	10.5	N17 33.6	4.2	55.9	60	///	02 13	03 18	05 03	05 41	06 27	07 22
07	285 55.8	03.6	265 19.2	10.5	17 37.8	4.1	55.9	N 58	00 49	02 36	03 32	05 15	05 54	06 41	07 35
08	300 55.8	04.1	279 48.7	10.5	17 41.9	4.1	55.9	56	01 34	02 54	03 44	05 25	06 05	06 52	07 46
09	315 55.8	04.7	294 18.2	10.6	17 46.0	3.9	55.8	54	02 01	03 08	03 54	05 33	06 15	07 02	07 55
10	330 55.8	05.3	308 47.8	10.5	17 49.9	3.8	55.8	52	02 22	03 21	04 04	05 41	06 23	07 11	08 04
11	345 55.8	05.9	323 17.3	10.5	17 53.7	3.8	55.8	50	02 39	03 32	04 12	05 48	06 31	07 19	08 12
12	0 55.8	N19 06.4	337 46.8	10.5	N17 57.5	3.6	55.8	45	03 11	03 55	04 29	06 04	06 48	07 36	08 28
13	15 55.8	07.0	352 16.3	10.6	18 01.1	3.6	55.7	N 40	03 34	04 12	04 43	06 16	07 01	07 50	08 41
14	30 55.7	07.6	6 45.9	10.5	18 04.7	3.4	55.7	35	03 53	04 27	04 55	06 27	07 13	08 02	08 53
15	45 55.7	08.2	21 15.4	10.6	18 08.1	3.4	55.7	30	04 08	04 39	05 06	06 36	07 23	08 12	09 03
16	60 55.7	08.7	35 45.0	10.5	18 11.5	3.3	55.7	20	04 32	05 00	05 23	06 52	07 40	08 30	09 19
17	75 55.7	09.3	50 14.5	10.6	18 14.8	3.2	55.6	N 10	04 50	05 16	05 39	07 06	07 56	08 45	09 34
18	90 55.7	N19 09.9	64 44.1	10.6	N18 18.0	3.0	55.6	0	05 05	05 31	05 53	07 20	08 10	09 00	09 48
19	105 55.7	10.5	79 13.7	10.6	18 21.0	3.0	55.6	S 10	05 19	05 45	06 07	07 33	08 25	09 14	10 02
20	120 55.7	11.0	93 43.3	10.6	18 24.0	2.9	55.6	20	05 32	05 58	06 22	07 48	08 40	09 30	10 17
21	135 55.6	11.6	108 12.9	10.6	18 26.9	2.8	55.6	30	05 44	06 13	06 39	08 04	08 58	09 48	10 34
22	150 55.6	12.2	122 42.5	10.6	18 29.7	2.7	55.5	35	05 51	06 21	06 49	08 13	09 08	09 58	10 44
23	165 55.6	12.8	137 12.1	10.6	18 32.4	2.6	55.5	40	05 58	06 30	07 00	08 24	09 19	10 10	10 55
00	180 55.6	N19 13.3	151 41.7	10.7	N18 35.0	2.5	55.5	45	06 05	06 41	07 13	08 37	09 33	10 24	11 08
01	195 55.6	13.9	166 11.4	10.6	18 37.5	2.4	55.5	S 50	06 13	06 53	07 29	08 53	09 50	10 41	11 25
02	210 55.6	14.5	180 41.0	10.7	18 39.9	2.3	55.4	52	06 17	06 59	07 37	09 00	09 58	10 49	11 32
03	225 55.5	15.0	195 10.7	10.7	18 42.2	2.2	55.4	54	06 21	07 05	07 45	09 09	10 07	10 58	11 41
04	240 55.5	15.6	209 40.4	10.6	18 44.4	2.1	55.4	56	06 25	07 11	07 54	09 18	10 17	11 08	11 50
05	255 55.5	16.2	224 10.0	10.8	18 46.5	2.0	55.4	58	06 30	07 19	08 05	09 28	10 28	11 19	12 01
06	270 55.5	N19 16.7	238 39.8	10.7	N18 48.5	1.9	55.4	S 60	06 35	07 27	08 17	09 40	10 42	11 33	12 13
07	285 55.5	17.3	253 09.5	10.7	18 50.4	1.8	55.3								
08	300 55.5	17.9	267 39.2	10.8	18 52.2	1.8	55.3	Lat.	Sun-set	Twilight	Moonset				
09	315 55.4	18.4	282 09.0	10.7	18 54.0	1.6	55.3		Civil	Naut.	16	17	18	19	
10	330 55.4	19.0	296 38.7	10.8	18 55.6	1.5	55.3	°	h m	h m	h m	h m	h m	h m	h m
11	345 55.4	19.6	311 08.5	10.8	18 57.1	1.5	55.3	N 72	□	□	□	□	□	□	□
12	0 55.4	N19 20.1	325 38.3	10.8	N18 58.6	1.3	55.2	N 70	□	□	□	24 21	00 21	01 31	02 05
13	15 55.4	20.7	340 08.1	10.9	18 59.9	1.3	55.2	68	22 21	///	///	23 35	24 37	00 37	01 18
14	30 55.4	21.2	354 38.0	10.8	19 01.2	1.1	55.2	66	21 41	///	///	23 05	24 05	00 05	00 48
15	45 55.3	21.8	9 07.8	10.9	19 02.3	1.1	55.2	64	21 14	23 07	///	22 43	23 41	24 25	00 25
16	60 55.3	22.4	23 37.7	10.9	19 03.4	0.9	55.2	62	20 53	22 13	///	22 25	23 22	24 07	00 07
17	75 55.3	22.9	38 07.6	10.9	19 04.3	0.9	55.1	60	20 36	21 42	///	22 10	23 06	23 52	24 28
18	90 55.3	N19 23.5	52 37.5	10.9	N19 05.2	0.7	55.1	N 58	20 22	21 19	23 12	21 58	22 53	23 39	24 17
19	105 55.3	24.0	67 07.4	11.0	19 05.9	0.7	55.1	56	20 10	21 01	22 23	21 47	22 42	23 28	24 07
20	120 55.2	24.6	81 37.4	10.9	19 06.6	0.6	55.1	54	19 59	20 46	21 54	21 37	22 32	23 19	23 58
21	135 55.2	25.2	96 07.3	11.0	19 07.2	0.5	55.1	52	19 50	20 33	21 33	21 28	22 23	23 10	23 50
22	150 55.2	25.7	110 37.3	11.0	19 07.7	0.4	55.0	50	19 42	20 22	21 15	21 21	22 15	23 02	23 43
23	165 55.2	26.3	125 07.3	11.1	19 08.1	0.2	55.0	45	19 24	19 59	20 43	21 05	21 58	22 46	23 28
00	180 55.2	N19 26.8	139 37.4	11.0	N19 08.3	0.2	55.0	N 40	19 10	19 41	20 19	20 51	21 44	22 32	23 15
01	195 55.1	27.4	154 07.4	11.1	19 08.5	0.1	55.0	35	18 58	19 26	20 01	20 40	21 32	22 20	23 04
02	210 55.1	27.9	168 37.5	11.1	19 08.6	0.1	55.0	30	18 47	19 14	19 45	20 30	21 22	22 11	22 55
03	225 55.1	28.5	183 07.6	11.2	19 08.7	0.1	55.0	20	18 30	18 53	19 21	20 13	21 04	21 53	22 39
04	240 55.1	29.1	197 37.8	11.1	19 08.6	0.2	54.9	N 10	18 14	18 37	19 03	19 58	20 49	21 38	22 25
05	255 55.1	29.6	212 07.9	11.2	19 08.4	0.3	54.9	0	18 00	18 22	18 47	19 44	20 34	21 23	22 11
06	270 55.0	N19 30.2	226 38.1	11.2	N19 08.1	0.3	54.9	S 10	17 46	18 08	18 34	19 30	20 20	21 09	21 58
07	285 55.0	30.7	241 08.3	11.2	19 07.8	0.5	54.9	20	17 31	17 54	18 21	19 15	20 04	20 54	21 44
08	300 55.0	31.3	255 38.5	11.3	19 07.3	0.6	54.9	30	17 14	17 39	18 08	18 58	19 46	20 36	21 27
09	315 55.0	31.8	270 08.8	11.3	19 06.7	0.6	54.8	35	17 04	17 31	18 01	18 48	19 36	20 26	21 18
10	330 54.9	32.4	284 39.1	11.3	19 06.1	0.7	54.8	40	16 53	17 22	17 55	18 37	19 24	20 14	21 07
11	345 54.9	32.9	299 09.4	11.3	19 05.4	0.9	54.8	45	16 39	17 11	17 47	18 24	19 10	20 00	20 54
12	0 54.9	N19 33.5	313 39.7	11.4	N19 04.5	0.9	54.8	S 50	16 23	16 59	17 39	18 08	18 53	19 43	20 38
13	15 54.9	34.0	328 10.1	11.4	19 03.6	1.0	54.8	52	16 16	16 54	17 35	18 00	18 45	19 35	20 30
14	30 54.8	34.6	342 40.5	11.4	19 02.6	1.1	54.8	54	16 07	16 47	17 31	17 52	18 36	19 26	20 22
15	45 54.8	35.1	357 10.9	11.4	19 01.5	1.2	54.8	56	15 58	16 41	17 27	17 42	18 26	19 16	20 13
16	60 54.8	35.7	11 41.3	11.5	19 00.3	1.3	54.7	58	15 47	16 33	17 22	17 31	18 14	19 05	20 03
17	75 54.8	36.2	26 11.8	11.5	18 59.0	1.4	54.7	S 60	15 35	16 25	17 17	17 19	18 01	18 52	19 51
18	90 54.7	N19 36.8	40 42.3	11.6	N18 57.6	1.4	54.7								
19	105 54.7	37.3	55 12.9	11.5	18 56.2	1.6	54.7	Day	SUN		MOON				
20	120 54.7	37.8	69 43.4	11.6	18 54.6	1.6	54.7		Eqn. of Time	Mer. Pass.	Mer. Upper	Pass. Lower	Age	Phase	
21	135 54.7	38.4	84 14.0	11.6	18 53.0	1.8	54.7		00h						
22	150 54.6	38.9	98 44.6	11.7	18 51.2	1.8	54.6		m s	m s	h m	h m	h m	d	
23	165 54.6	39.5	113 15.3	11.7	18 49.4	1.9	54.6	16	03 44	03 43	11 56	13 32	01 07	02	
	S.D. 15.8	d 0.6	S.D. 15.2	15.1	14.9			17	03 42	03 42	11 56	14 22	01 57	03	
								18	03 41	03 40	11 56	15 12	02 47	04	

	ARIES			VENUS -4.2			MARS +1.5			JUPITER -2.0			SATURN +0.7			STARS		
G.M.T.	G.H.A.			G.H.A.			G.H.A.			G.H.A.			G.H.A.			Name	S.H.A.	Dec.
d h																		
19 00	236	25.4	219 59.8 N 6 27.2	106 45.6 N 20 09.6	286 50.1 S 18 53.7	294 27.2 S 20 15.5	Acamar	315 48.7	S 40 27.6									
	251	27.9	235 00.9 27.4	121 46.7 09.3	301 52.5 53.7	309 29.7 15.5	Achernar	335 56.6	S 57 25.9									
	266	30.3	250 02.0 27.6	136 47.8 08.9	316 54.9 53.7	324 32.2 15.5	Acrux	173 52.9	S 62 53.3									
	281	32.8	265 03.1 27.8	151 48.9 08.5	331 57.3 53.7	339 34.7 15.5	Adhara	255 43.8	S 28 55.4									
	296	35.3	280 04.2 27.9	166 49.9 08.1	346 59.7 53.7	354 37.2 15.5	Aldebaran	291 35.0	N 16 25.8									
05	311	37.7	295 05.3 28.1	181 51.0 07.8	2 02.1 53.7	9 39.7 15.5												
06	326	40.2	310 06.4 N 6 28.3	196 52.1 N 20 07.4	17 04.6 S 18 53.7	24 42.2 S 20 15.6	Alioth	166 54.9	N 56 10.4									
07	341	42.7	325 07.4 28.5	211 53.2 07.0	32 07.0 53.6	39 44.7 15.6	Alkaid	153 29.5	N 49 30.5									
08	356	45.1	340 08.5 28.7	226 54.3 06.6	47 09.4 53.6	54 47.2 15.6	Al Na'ir	28 33.2	S 47 08.7									
FRI DAY	09	11 47.6	355 09.6 28.9	241 55.4 06.3	62 11.8 53.6	69 49.7 15.6	Alnilam	276 26.7	S 1 13.3									
	10	26 50.1	10 10.7 29.1	256 56.5 05.9	77 14.2 53.6	84 52.2 15.6	Alphard	218 34.8	S 8 29.6									
	11	41 52.5	25 11.8 29.2	271 57.5 05.5	92 16.6 53.6	99 54.7 15.6												
	12	56 55.0	40 12.8 N 6 29.4	286 58.6 N 20 05.1	107 19.0 S 18 53.6	114 57.2 S 20 15.6	Alphecca	126 44.0	N 26 50.7									
	13	71 57.4	55 13.9 29.6	301 59.7 04.8	122 21.4 53.6	129 59.7 15.6	Alpheratz	358 24.5	N 28 52.4									
14	86 59.9	70 15.0 29.8	317 00.8 04.4	137 23.8 53.6	145 02.2 15.7	Altair	62 46.5	N 8 45.9										
15	102 02.4	85 16.0 30.0	332 01.9 04.0	152 26.3 53.6	160 04.7 15.7	Ankaa	353 54.8	S 42 30.9										
16	117 04.8	100 17.1 30.2	347 03.0 03.6	167 28.7 53.6	175 07.2 15.7	Antares	113 14.2	S 26 20.8										
17	132 07.3	115 18.2 30.4	2 04.1 03.3	182 31.1 53.6	190 09.7 15.7													
18	147 09.8	130 19.2 N 6 30.6	17 05.1 N 20 02.9	197 33.5 S 18 53.6	205 12.2 S 20 15.7	Arcturus	146 31.4	N 19 23.1										
19	162 12.2	145 20.3 30.8	32 06.2 02.5	212 35.9 53.6	220 14.7 15.7	Atria	108 50.9	S 68 57.4										
20	177 14.7	160 21.3 31.0	47 07.3 02.1	227 38.3 53.6	235 17.2 15.7	Avior	234 34.4	S 59 23.4										
21	192 17.2	175 22.4 31.2	62 08.4 01.7	242 40.7 53.6	250 19.7 15.7	Bellatrix	279 14.6	N 6 18.8										
22	207 19.6	190 23.4 31.4	77 09.5 01.4	257 43.1 53.6	265 22.3 15.7	Betelgeuse	271 44.2	N 7 23.9										
23	222 22.1	205 24.5 31.7	92 10.6 01.0	272 45.6 53.6	280 24.8 15.8													
20 00	237 24.6	220 25.5 N 6 31.9	107 11.7 N 20 00.6	287 48.0 S 18 53.6	295 27.3 S 20 15.8	Canopus	264 14.1	S 52 40.8										
	252 27.0	235 26.6 32.1	122 12.7 20 00.2	302 50.4 53.6	310 29.8 15.8	Capella	281 33.1	N 45 57.5										
	267 29.5	250 27.6 32.3	137 13.8 19 59.9	317 52.8 53.6	325 32.3 15.8	Deneb	49 58.1	N 45 08.3										
	282 31.9	265 28.7 32.5	152 14.9 59.5	332 55.2 53.6	340 34.8 15.8	Denebola	183 13.7	N 14 47.3										
	297 34.4	280 29.7 32.7	167 16.0 59.1	347 57.6 53.6	355 37.3 15.8	Diphda	349 35.6	S 18 12.0										
05	312 36.9	295 30.7 32.9	182 17.1 58.7	3 00.1 53.6	10 39.8 15.8													
06	327 39.3	310 31.8 N 6 33.1	197 18.2 N 19 58.3	18 02.5 S 18 53.6	25 42.3 S 20 15.9	Dubhe	194 39.8	N 61 57.9										
07	342 41.8	325 32.8 33.4	212 19.2 58.0	33 04.9 53.6	40 44.8 15.9	Elnath	279 02.8	N 28 34.4										
08	357 44.3	340 33.8 33.6	227 20.3 57.6	48 07.3 53.6	55 47.3 15.9	Eltanin	91 04.0	N 51 29.5										
09	12 46.7	355 34.9 33.8	242 21.4 57.2	63 09.7 53.5	70 49.8 15.9	Enif	34 25.8	N 9 41.7										
10	27 49.2	10 35.9 34.0	257 22.5 56.8	78 12.1 53.5	85 52.3 15.9	Fomalhaut	16 07.5	S 29 49.6										
11	42 51.7	25 36.9 34.2	272 23.6 56.4	93 14.6 53.5	100 54.8 15.9													
12	57 54.1	40 37.9 N 6 34.5	287 24.7 N 19 56.1	108 17.0 S 18 53.5	115 57.4 S 20 15.9	Gacrux	172 44.4	S 56 54.0										
13	72 56.6	55 39.0 34.7	302 25.8 55.7	123 19.4 53.5	130 59.9 15.9	Gienah	176 32.7	S 17 19.7										
14	87 59.1	70 40.0 34.9	317 26.8 55.3	138 21.8 53.5	146 02.4 16.0	Hadar	149 43.2	S 60 11.3										
15	103 01.5	85 41.0 35.1	332 27.9 54.9	153 24.2 53.5	161 04.9 16.0	Hamal	328 45.5	N 23 16.6										
16	118 04.0	100 42.0 35.4	347 29.0 54.5	168 26.7 53.5	176 07.4 16.0	Kaus Aust.	84 35.7	S 34 24.1										
17	133 06.4	115 43.0 35.6	2 30.1 54.1	183 29.1 53.5	191 09.9 16.0													
18	148 08.9	130 44.0 N 6 35.8	17 31.2 N 19 53.8	198 31.5 S 18 53.5	206 12.4 S 20 16.0	Kochab	137 17.2	N 74 19.0										
19	163 11.4	145 45.0 36.1	32 32.3 53.4	213 33.9 53.5	221 14.9 16.0	Markab	14 17.7	N 14 59.6										
20	178 13.8	160 46.1 36.3	47 33.3 53.0	228 36.3 53.5	236 17.4 16.0	Menkar	314 56.6	N 3 56.1										
21	193 16.3	175 47.1 36.5	62 34.4 52.6	243 38.8 53.5	251 19.9 16.0	Menkent	148 53.7	S 36 10.9										
22	208 18.8	190 48.1 36.8	77 35.5 52.2	258 41.2 53.5	266 22.4 16.1	Miaplacidus	221 48.2	S 69 33.8										
23	223 21.2	205 49.1 37.0	92 36.6 51.8	273 43.6 53.5	281 25.0 16.1													
21 00	238 23.7	220 50.1 N 6 37.2	107 37.7 N 19 51.5	288 46.0 S 18 53.5	296 27.5 S 20 16.1	Mirfak	309 37.3	N 49 43.3										
	253 26.2	235 51.1 37.5	122 38.8 51.1	303 48.5 53.5	311 30.0 16.1	Nunki	76 46.9	S 26 20.6										
	268 28.6	250 52.1 37.7	137 39.9 50.7	318 50.9 53.5	326 32.5 16.1	Peacock	54 21.0	S 56 51.3										
	283 31.1	265 53.1 38.0	152 40.9 50.3	333 53.3 53.5	341 35.0 16.1	Pollux	244 16.1	N 28 07.2										
	298 33.6	280 54.0 38.2	167 42.0 49.9	348 55.7 53.5	356 37.5 16.1	Procyon	245 41.2	N 5 19.4										
05	313 36.0	295 55.0 38.5	182 43.1 49.5	3 58.2 53.5	11 40.0 16.2													
06	328 38.5	310 56.0 N 6 38.7	197 44.2 N 19 49.2	19 00.6 S 18 53.5	26 42.5 S 20 16.2	Rasalhague	96 42.7	N 12 35.3										
07	343 40.9	325 57.0 38.9	212 45.3 48.8	34 03.0 53.5	41 45.0 16.2	Regulus	208 25.4	N 12 09.4										
08	358 43.4	340 58.0 39.2	227 46.4 48.4	49 05.4 53.5	56 47.6 16.2	Rigel	281 50.2	S 8 14.9										
09	13 45.9	355 59.0 39.4	242 47.4 48.0	64 07.9 53.5	71 50.1 16.2	Rigel Kent.	140 44.9	S 60 40.6										
10	28 48.3	11 00.0 39.7	257 48.5 47.6	79 10.3 53.5	86 52.6 16.2	Sabik	102 57.4	S 15 40.6										
11	43 50.8	26 00.9 39.9	272 49.6 47.2	94 12.7 53.5	101 55.1 16.2													
12	58 53.3	41 01.9 N 6 40.2	287 50.7 N 19 46.8	109 15.1 S 18 53.5	116 57.6 S 20 16.2	Schedar	350 25.8	N 56 19.2										
13	73 55.7	56 02.9 40.5	302 51.8 46.5	124 17.6 53.5	132 00.1 16.3	Shaula	97 15.0	S 37 04.5										
14	88 58.2	71 03.9 40.7	317 52.9 46.1	139 20.0 53.5	147 02.6 16.3	Sirius	259 08.7	S 16 40.0										
15	104 00.7	86 04.8 41.0	332 53.9 45.7	154 22.4 53.5	162 05.1 16.3	Spica	159 12.5	N 10 57.6										
16	119 03.1	101 05.8 41.2	347 55.0 45.3	169 24.8 53.5	177 07.7 16.3	Suhail	223 21.5	S 43 16.9										
17	134 05.6	116 06.8 41.5	2 56.1 44.9	184 27.3 53.5	192 10.2 16.3													
18	149 08.0	131 07.8 N 6 41.7	17 57.2 N 19 44.5	199 29.7 S 18 53.5	207 12.7 S 20 16.3	Vega	81 05.3	N 38 44.8										
19	164 10.5	146 08.7 42.0	32 58.3 44.1	214 32.1 53.5	222 15.2 16.3	Zuben'ubi	137 48.7	S 15 52.9										
20	179 13.0	161 09.7 42.3	47 59.4 43.7	229 34.6 53.5	237 17.7 16.4													
21	194 15.4	176 10.6 42.5	63 00.4 43.4	244 37.0 53.5	252 20.2 16.4													
22	209 17.9	191 11.6 42.8	78 01.5 43.0	259 39.4 53.5	267 22.7 16.4	Venus	343 00.9	9 18										
23	224 20.4	206 12.6 43.1	93 02.6 42.6	274 41.9 53.5	282 25.3 16.4	Mars	229 47.1	16 50										
Mer. Pass.	8 09.0	v 1.0 d 0.2	v 1.1 d 0.4	v 2.4 d 0.0	v 2.5 d 0.0	Saturn	50 23.4	4 48										
						Jupiter	58 02.7	4 17										

	ARIES			VENUS -4.2			MARS +1.6			JUPITER -2.1			SATURN +0.7			STARS		
G.M.T.	G.H.A.			G.H.A.			G.H.A.			G.H.A.			G.H.A.			Name	S.H.A.	Dec.
d h																		
MONDAY	2200	239 22.8	221 13.5 N 6 43.3	108 03.7 N 19 42.2	289 44.3 S 18 53.5	297 27.8 S 20 16.4	Acamar	315 48.6	S 40 27.6									
	01	254 25.3	236 14.5 43.6	123 04.8 41.8	304 46.7 53.5	312 30.3 16.4	Achernar	335 56.6	S 57 25.9									
	02	269 27.8	251 15.4 43.9	138 05.9 41.4	319 49.2 53.5	327 32.8 16.4	Acrux	173 52.9	S 62 53.3									
	03	284 30.2	266 16.4 44.1	153 06.9 41.0	334 51.6 53.5	342 35.3 16.5	Adhara	255 43.8	S 28 55.4									
	04	299 32.7	281 17.3 44.4	168 08.0 40.6	349 54.0 53.5	357 37.8 16.5	Aldebaran	291 34.9	N 16 25.8									
	05	314 35.2	296 18.3 44.7	183 09.1 40.2	4 56.5 53.5	12 40.4 16.5												
	06	329 37.6	311 19.2 N 6 45.0	198 10.2 N 19 39.9	19 58.9 S 18 53.5	27 42.9 S 20 16.5	Alioth	166 54.9	N 56 10.4									
	07	344 40.1	326 20.2 45.2	213 11.3 39.5	35 01.3 53.5	42 45.4 16.5	Alkaid	153 29.5	N 49 30.6									
	08	359 42.5	341 21.1 45.5	228 12.3 39.1	50 03.8 53.5	57 47.9 16.5	Al Na'ir	28 33.2	S 47 08.7									
	09	14 45.0	356 22.0 45.8	243 13.4 38.7	65 06.2 53.5	72 50.4 16.5	Alnilam	276 26.7	S 1 13.7									
	10	29 47.5	11 23.0 46.1	258 14.5 38.3	80 08.6 53.5	87 52.9 16.5	Alphard	218 34.9	S 8 29.6									
	11	44 49.9	26 23.9 46.4	273 15.6 37.9	95 11.1 53.5	102 55.4 16.6												
	12	59 52.4	41 24.8 N 6 46.6	288 16.7 N 19 37.5	110 13.5 S 18 53.5	117 58.0 S 20 16.6	Alphecca	126 44.0	N 26 50.7									
	13	74 54.9	56 25.8 46.9	303 17.8 37.1	125 15.9 53.5	133 00.5 16.6	Alpheratz	358 24.4	N 28 52.4									
	14	89 57.3	71 26.7 47.2	318 18.8 36.7	140 18.4 53.5	148 03.0 16.6	Altair	62 46.4	N 8 45.9									
	15	104 59.8	86 27.6 47.5	333 19.9 36.3	155 20.8 53.5	163 05.5 16.6	Ankaa	353 54.8	S 42 30.8									
	16	120 02.3	101 28.6 47.8	348 21.0 36.0	170 23.2 53.5	178 08.0 16.6	Antares	113 14.2	S 26 20.8									
	17	135 04.7	116 29.5 48.1	3 22.1 35.6	185 25.7 53.5	193 10.5 16.7												
	18	150 07.2	131 30.4 N 6 48.4	18 23.2 N 19 35.2	200 28.1 S 18 53.5	208 13.1 S 20 16.7	Arcturus	146 31.4	N 19 23.1									
	19	165 09.7	146 31.3 48.6	33 24.2 34.8	215 30.5 53.5	223 15.6 16.7	Atria	108 50.9	S 68 57.4									
	20	180 12.1	161 32.3 48.9	48 25.3 34.4	230 33.0 53.5	238 18.1 16.7	Avior	234 34.4	S 59 23.4									
	21	195 14.6	176 33.2 49.2	63 26.4 34.0	245 35.4 53.5	253 20.6 16.7	Bellatrix	279 14.6	N 6 18.8									
	22	210 17.0	191 34.1 49.5	78 27.5 33.6	260 37.9 53.5	268 23.1 16.7	Betelgeuse	271 44.2	N 7 23.9									
	23	225 19.5	206 35.0 49.8	93 28.6 33.2	275 40.3 53.5	283 25.7 16.7												
TUESDAY	2300	240 22.0	221 35.9 N 6 50.1	108 29.7 N 19 32.8	290 42.7 S 18 53.5	298 28.2 S 20 16.8	Canopus	264 14.1	S 52 40.7									
	01	255 24.4	236 36.8 50.4	123 30.7 32.4	305 45.2 53.5	313 30.7 16.8	Capella	281 33.1	N 45 57.5									
	02	270 26.9	251 37.7 50.7	138 31.8 32.0	320 47.6 53.5	328 33.2 16.8	Deneb	49 58.1	N 45 08.3									
	03	285 29.4	266 38.6 51.0	153 32.9 31.6	335 50.1 53.5	343 35.7 16.8	Denebola	183 13.7	N 14 47.3									
	04	300 31.8	281 39.5 51.3	168 34.0 31.2	350 52.5 53.5	358 38.3 16.8	Diphda	349 35.6	S 18 12.0									
	05	315 34.3	296 40.4 51.6	183 35.1 30.8	5 54.9 53.5	13 40.8 16.8												
	06	330 36.8	311 41.4 N 6 51.9	198 36.1 N 19 30.5	20 57.4 S 18 53.5	28 43.3 S 20 16.8	Dubhe	194 39.9	N 61 57.9									
	07	345 39.2	326 42.3 52.2	213 37.2 30.1	35 59.8 53.6	43 45.8 16.9	Elnath	279 02.8	N 28 34.4									
	08	0 41.7	341 43.2 52.5	228 38.3 29.7	51 02.3 53.6	58 48.3 16.9	Eltanin	91 04.0	N 51 29.6									
	09	15 44.1	356 44.0 52.8	243 39.4 29.3	66 04.7 53.6	73 50.9 16.9	Enif	34 25.7	N 9 41.7									
	10	30 46.6	11 44.9 53.1	258 40.5 28.9	81 07.2 53.6	88 53.4 16.9	Fomalhaut	16 07.5	S 29 49.5									
	11	45 49.1	26 45.8 53.4	273 41.5 28.5	96 09.6 53.6	103 55.9 16.9												
	12	60 51.5	41 46.7 N 6 53.7	288 42.6 N 19 28.1	111 12.0 S 18 53.6	118 58.4 S 20 16.9	Gacrux	172 44.4	S 56 54.0									
	13	75 54.0	56 47.6 54.1	303 43.7 27.7	126 14.5 53.6	134 00.9 17.0	Gienah	176 32.7	S 17 19.7									
	14	90 56.5	71 48.5 54.4	318 44.8 27.3	141 16.9 53.6	149 03.5 17.0	Hadar	149 43.2	S 60 11.3									
	15	105 58.9	86 49.4 54.7	333 45.9 26.9	156 19.4 53.6	164 06.0 17.0	Hamal	328 45.5	N 23 16.6									
	16	121 01.4	101 50.3 55.0	348 47.0 26.5	171 21.8 53.6	179 08.5 17.0	Kaus Aust.	84 35.7	S 34 24.1									
	17	136 03.9	116 51.2 55.3	3 48.0 26.1	186 24.3 53.6	194 11.0 17.0												
	18	151 06.3	131 52.0 N 6 55.6	18 49.1 N 19 25.7	201 26.7 S 18 53.6	209 13.5 S 20 17.0	Kochab	137 17.3	N 74 19.0									
	19	166 08.8	146 52.9 55.9	33 50.2 25.3	216 29.1 53.6	224 16.1 17.0	Markab	14 17.6	N 14 59.6									
	20	181 11.3	161 53.8 56.2	48 51.3 24.9	231 31.6 53.6	239 18.6 17.1	Menkar	314 56.6	N 3 56.1									
	21	196 13.7	176 54.7 56.6	63 52.4 24.5	246 34.0 53.6	254 21.1 17.1	Menkent	148 53.7	S 36 10.9									
	22	211 16.2	191 55.5 56.9	78 53.4 24.1	261 36.5 53.6	269 23.6 17.1	Miaplacidus	221 48.2	S 69 33.8									
	23	226 18.6	206 56.4 57.2	93 54.5 23.7	276 38.9 53.6	284 26.2 17.1												
WEDNESDAY	2400	241 21.1	221 57.3 N 6 57.5	108 55.6 N 19 23.3	291 41.4 S 18 53.6	299 28.7 S 20 17.1	Mirfak	309 37.3	N 49 43.3									
	01	256 23.6	236 58.2 57.9	123 56.7 22.9	306 43.8 53.6	314 31.2 17.1	Nunki	76 46.8	S 26 20.6									
	02	271 26.0	251 59.0 58.2	138 57.8 22.5	321 46.3 53.6	329 33.7 17.2	Peacock	54 21.0	S 56 51.3									
	03	286 28.5	266 59.9 58.5	153 58.8 22.1	336 48.7 53.6	344 36.2 17.2	Pollux	244 16.1	N 28 07.2									
	04	301 31.0	282 00.8 58.8	168 59.9 21.7	351 51.2 53.6	359 38.8 17.2	Procyon	245 41.2	N 5 19.4									
	05	316 33.4	297 01.6 59.2	184 01.0 21.3	6 53.6 53.6	14 41.3 17.2												
	06	331 35.9	312 02.5 N 6 59.5	199 02.1 N 19 20.9	21 56.1 S 18 53.6	29 43.8 S 20 17.2	Rasalhague	96 42.7	N 12 35.3									
	07	346 38.4	327 03.3 6 59.8	214 03.2 20.5	36 58.5 53.6	44 46.3 17.2	Regulus	208 25.4	N 12 09.4									
	08	1 40.8	342 04.2 7 00.1	229 04.2 20.1	52 01.0 53.7	59 48.9 17.3	Rigel	281 50.2	S 8 14.9									
	09	16 43.3	357 05.1 7 00.5	244 05.3 19.7	67 03.4 53.7	74 51.4 17.3	Rigel Kent.	140 44.9	S 60 40.6									
	10	31 45.7	12 05.9 00.8	259 06.4 19.3	82 05.9 53.7	89 53.9 17.3	Sabik	102 57.4	S 15 40.6									
	11	46 48.2	27 06.8 01.1	274 07.5 18.9	97 08.3 53.7	104 56.4 17.3												
	12	61 50.7	42 07.6 N 7 01.5	289 08.6 N 19 18.5	112 10.8 S 18 53.7	119 59.0 S 20 17.3	Schedar	350 25.8	N 56 19.2									
	13	76 53.1	57 08.5 01.8	304 09.6 18.1	127 13.2 53.7	135 01.5 17.3	Shaula	97 15.0	S 37 04.5									
	14	91 55.6	72 09.3 02.2	319 10.7 17.7	142 15.7 53.7	150 04.0 17.3	Sirius	259 08.7	S 16 40.0									
	15	106 58.1	87 10.2 02.5	334 11.8 17.3	157 18.1 53.7	165 06.5 17.4	Spica	159 12.5	S 10 57.6									
	16	122 00.5	102 11.0 02.8	349 12.9 16.9	172 20.6 53.7	180 09.1 17.4	Suhail	223 21.5	S 43 16.9									
	17	137 03.0	117 11.8 03.2	4 14.0 16.5	187 23.0 53.7	195 11.6 17.4												
	18	152 05.5	132 12.7 N 7 03.5	19 15.0 N 19 16.1	202 25.5 S 18 53.7	210 14.1 S 20 17.4	Vega	81 05.3	N 38 44.8									
	19	167 07.9	147 13.5 03.9	34 16.1 15.7	217 27.9 53.7	225 16.6 17.4	Zuben'ubi	137 48.7	S 15 52.9									
	20	182 10.4	162 14.4 04.2	49 17.2 15.3	232 30.4 53.7	240 19.2 17.4												
	21	197 12.9	177 15.2 04.5	64 18.3 14.9	247 32.9 53.7	255 21.7 17.5												
	22	212 15.3	192 16.0 04.9	79 19.4 14.5	262 35.3 53.7	270 24.2 17.5	Venus	341 13.9	9 13									
	23	227 17.8	207 16.9 05.2	94 20.4 14.1	277 37.8 53.7	285 26.7 17.5	Mars	228 07.7	16 45									
Mer. Pass. 7 57.2															Jupiter	50 20.7	4 36	
															Saturn	58 06.2	4 05	

G.M.T.		SUN		MOON						Lat.	Twilight		Sun-rise	Moonrise					
		G.H.A.	Dec.	G.H.A.	<i>v</i>	Dec.	<i>d</i>	H.P.	Naut.		Civil	22		23	24	25			
d	h	°	'	°	'	°	'	°	'	°	'	h	m	h	m	h	m	h	m
22	00	180	52.1	N20	17.5	94	01.1	13.9	N13	03.5	7.3	54.3	□	□	□	09 20	11 01	12 39	14 19
	01	195	52.0		18.0	108	34.0	14.0		12 56.2	7.3	54.3	□	□	□	09 42	11 13	12 45	14 19
	02	210	52.0		18.5	123	07.0	14.0		12 48.9	7.3	54.3	///	///	00 56	09 58	11 24	12 50	14 19
	03	225	52.0		19.0	137	40.0	14.1		12 41.6	7.5	54.3	///	///	01 51	10 11	11 32	12 55	14 19
	04	240	51.9		19.5	152	13.1	14.0		12 34.1	7.4	54.3	///	///	02 23	10 22	11 39	12 58	14 19
	05	255	51.9		20.0	166	46.1	14.1		12 26.7	7.6	54.3	///	01 16	02 47	10 31	11 45	13 01	14 19
	06	270	51.8	N20	20.5	181	19.2	14.1	N12	19.1	7.6	54.3	///	01 54	03 05	10 39	11 51	13 04	14 19
	07	285	51.8		21.0	195	52.3	14.1		12 11.5	7.6	54.3	01 09	02 41	03 34	10 53	12 00	13 08	14 18
	08	300	51.7		21.5	210	25.4	14.1		12 03.9	7.7	54.3	01 44	02 57	03 45	10 58	12 03	13 10	14 18
	09	315	51.7		22.0	224	58.5	14.2		11 56.2	7.7	54.3	02 08	03 11	03 55	11 03	12 07	13 12	14 18
MONDAY	10	330	51.6		22.5	239	31.7	14.2		11 48.5	7.8	54.4	02 27	03 23	04 04	11 07	12 10	13 13	14 18
	11	345	51.6		23.0	254	04.9	14.2		11 40.7	7.9	54.4	03 03	03 48	04 23	11 17	12 16	13 16	14 18
	12	0	51.6	N20	23.5	268	38.1	14.2	N11	32.8	7.9	54.4	03 28	04 07	04 38	11 25	12 22	13 19	14 18
	13	15	51.5		24.0	283	11.3	14.2		11 24.9	7.9	54.4	03 48	04 23	04 51	11 32	12 26	13 22	14 18
	14	30	51.5		24.5	297	44.5	14.3		11 17.0	8.0	54.4	04 04	04 36	05 02	11 38	12 30	13 24	14 18
	15	45	51.4		25.0	312	17.8	14.2		11 09.0	8.1	54.4	04 29	04 58	05 21	11 48	12 38	13 27	14 18
	16	60	51.4		25.5	326	51.0	14.3		11 00.9	8.1	54.4	04 49	05 15	05 38	11 58	12 44	13 31	14 18
	17	75	51.3		25.9	341	24.3	14.3		10 52.8	8.1	54.4	05 05	05 31	05 53	12 06	12 50	13 34	14 18
	18	90	51.3	N20	26.4	355	57.6	14.3	N10	44.7	8.2	54.4	05 20	05 46	06 08	12 15	12 56	13 37	14 18
	19	105	51.2		26.9	10	30.9	14.3		10 36.5	8.3	54.4	05 34	06 01	06 24	12 24	13 02	13 40	14 18
TUESDAY	20	120	51.2		27.4	25	04.2	14.3		10 28.2	8.3	54.5	05 48	06 17	06 42	12 34	13 09	13 44	14 18
	21	135	51.1		27.9	39	37.5	14.4		10 19.9	8.3	54.5	05 55	06 26	06 53	12 40	13 13	13 46	14 18
	22	150	51.1		28.4	54	10.9	14.4		10 11.6	8.4	54.5	06 02	06 35	07 05	12 46	13 18	13 48	14 18
	23	165	51.0		28.9	68	44.3	14.3		10 03.2	8.5	54.5	06 11	06 47	07 19	12 54	13 23	13 51	14 18
	00	180	51.0	N20	29.4	83	17.6	14.4	N	9 54.7	8.4	54.5	06 20	07 00	07 37	13 04	13 29	13 54	14 18
	01	195	50.9		29.8	97	51.0	14.4		9 46.3	8.6	54.5	06 24	07 06	07 45	13 08	13 32	13 56	14 18
	02	210	50.9		30.3	112	24.4	14.4		9 37.7	8.5	54.5	06 29	07 13	07 54	13 13	13 36	13 57	14 18
	03	225	50.8		30.8	126	57.8	14.4		9 29.2	8.7	54.5	06 33	07 20	08 04	13 18	13 39	13 59	14 18
	04	240	50.8		31.3	141	31.2	14.4		9 20.5	8.6	54.6	06 38	07 28	08 16	13 24	13 43	14 01	14 18
	05	255	50.7		31.8	156	04.6	14.5		9 11.9	8.7	54.6	06 44	07 38	08 30	13 30	13 48	14 03	14 18
WEDNESDAY	06	270	50.7	N20	32.3	170	38.1	14.4	N	9 03.2	8.8	54.6							
	07	285	50.6		32.7	185	11.5	14.4		8 54.4	8.8	54.6	Lat.	Sun-set	Twilight	Moonset			
	08	300	50.6		33.2	199	44.9	14.5		8 45.6	8.8	54.6	Civil	Naut.		22	23	24	25
	09	315	50.5		33.7	214	18.4	14.5		8 36.8	8.9	54.6				h m	h m	h m	h m
	10	330	50.5		34.2	228	51.9	14.4		8 27.9	8.9	54.6	°	h m	h m	h m	h m	h m	h m
	11	345	50.4		34.7	243	25.3	14.5		8 19.0	8.9	54.7	□	□	□	02 43	02 34	02 27	02 20
	12	0	50.4	N20	35.1	257	58.8	14.5	N	8 10.1	9.0	54.7	□	□	□	02 21	02 20	02 19	02 17
	13	15	50.3		35.6	272	32.3	14.4		8 01.1	9.0	54.7	23 06	///	///	02 03	02 08	02 12	02 15
	14	30	50.3		36.1	287	05.7	14.5		7 52.1	9.1	54.7	22 06	///	///	01 49	01 59	02 07	02 13
	15	45	50.2		36.6	301	39.2	14.5		7 43.0	9.1	54.7	21 33	///	///	01 37	01 51	02 02	02 12
THURSDAY	16	60	50.2		37.0	316	12.7	14.5		7 33.9	9.2	54.7	21 08	22 42	///	01 27	01 44	01 58	02 10
	17	75	50.1		37.5	330	46.2	14.4		7 24.7	9.2	54.8	20 49	22 02	///	01 19	01 38	01 54	02 09
	18	90	50.1	N20	38.0	345	19.6	14.5	N	7 15.5	9.2	54.8	20 34	21 35	///	01 11	01 32	01 51	02 08
	19	105	50.0		38.5	359	53.1	14.5		7 06.3	9.3	54.8	20 20	21 14	22 49	01 05	01 27	01 48	02 07
	20	120	50.0		38.9	14	26.6	14.5		6 57.0	9.2	54.8	20 09	20 57	22 12	00 59	01 23	01 45	02 06
	21	135	49.9		39.4	29	00.1	14.4		6 47.8	9.4	54.8	19 59	20 43	21 47	00 53	01 19	01 43	02 06
	22	150	49.9		39.9	43	33.5	14.5		6 38.4	9.3	54.9	19 50	20 31	21 27	00 48	01 16	01 41	02 05
	23	165	49.8		40.3	58	07.0	14.5		6 29.1	9.4	54.9	19 31	20 06	20 52	00 38	01 08	01 36	02 03
	00	180	49.8	N20	40.8	72	40.5	14.4	N	6 19.7	9.5	54.9	19 15	19 47	20 26	00 29	01 01	01 32	02 02
	01	195	49.7		41.3	87	13.9	14.5		6 10.2	9.4	54.9	19 02	19 31	20 06	00 21	00 56	01 29	02 01
FRIDAY	02	210	49.7		41.8	101	47.4	14.5		6 00.8	9.5	54.9	18 51	19 18	19 50	00 15	00 51	01 26	02 00
	03	225	49.6		42.2	116	20.9	14.4		5 51.3	9.6	55.0	18 32	18 56	19 24	00 03	00 42	01 20	01 58
	04	240	49.6		42.7	130	54.3	14.4		5 41.7	9.5	55.0	18 16	18 38	19 05	24 35	00 35	01 15	01 56
	05	255	49.5		43.2	145	27.7	14.5		5 32.2	9.6	55.0	18 00	18 22	18 48	24 27	00 27	01 11	01 55
	06	270	49.4	N20	43.6	160	01.2	14.4	N	5 22.6	9.7	55.0	17 45	18 07	18 33	24 20	00 20	01 06	01 53
	07	285	49.4		44.1	174	34.6	14.4		5 12.9	9.6	55.0	17 29	17 53	18 19	24 12	00 12	01 02	01 50
	08	300	49.3		44.6	189	08.0	14.4		5 03.3	9.7	55.1	17 11	17 36	18 06	24 03	00 03	00 56	01 52
	09	315	49.3		45.0	203	41.4	14.4		4 53.6	9.7	55.1	17 00	17 27	17 58	23 58	24 53	00 53	01 49
	10	330	49.2		45.5	218	14.8	14.4		4 43.9	9.8	55.1	16 48	17 18	17 51	23 52	24 49	00 49	01 47
	11	345	49.2		46.0	232	48.2	14.4		4 34.1	9.8	55.1	16 34	17 06	17 42	23 45	24 45	00 45	01 46
SATURDAY	12	0	49.1	N20	46.4	247	21.6	14.3	N	4 24.3	9.8	55.1	16 16	16 53	17 33	23 37	24 40	00 40	01 44
	13	15	49.1		46.9	261	54.9	14.4		4 14.5	9.8	55.2	16 08	16 47	17 29	23 33	24 38	00 38	01 43
	14	30	49.0		47.3	276	28.3	14.3		4 04.7	9.8	55.2	15 59	16 40	17 24	23 29	24 35	00 35	01 42
	15	45	48.9		47.8	291	01.6	14.3		3 54.9	9.9	55.2	15 49	16 33	17 20	23 24	24 32	00 32	01 41
	16	60	48.9		48.3	305	34.9	14.3		3 45.0	9.9	55.2	15 37	16 24	17 14	23 19	24 29	00 29	01 40
	17	75	48.8		48.7	320	08.2	14.3		3 35.1	10.0	55.3	15 23	16 15	17 09	23 13	24 25	00 25	01 39
	18	90	48.8	N20	49.2	334	41.5	14.3	N	3 25.1	9.9	55.3							
	19	105	48.7		49.6	349	14.8	14.3		3 15.2	10.0	55.3							
	20	120	48.7		50.1	3	48.1	14.2		3 05.2	10.0	55.3			</				

		ARIES			VENUS -4-2			MARS +1-6			JUPITER -2-1			SATURN +0-6			STARS		
G.M.T.		G.H.A.	G.H.A.	Dec.	G.H.A.	Dec.	G.H.A.	Dec.	G.H.A.	Dec.	G.H.A.	Dec.	Name	S.H.A.	Dec.				
d	h																		
25	00	242 20-2	222 17-7 N	7 05-6	109 21-5 N	19 13-7	292 40-2 S	18 53-8	300 29-3 S	20 17-5			Acamar	315 48-6	S 40 27-6				
	01	257 22-7	237 18-5	05-9	124 22-6	13-3	307 42-7	53-8	315 31-8	17-5			Achernar	335 56-6	S 57 25-9				
	02	272 25-2	252 19-4	06-3	139 23-7	12-9	322 45-1	53-8	330 34-3	17-5			Acrux	173 52-9	S 62 53-3				
	03	287 27-6	267 20-2	06-6	154 24-8	12-5	337 47-6	53-8	345 36-9	17-6			Adhara	255 43-8	S 28 55-4				
	04	302 30-1	282 21-0	07-0	169 25-8	12-1	352 50-0	53-8	0 39-4	17-6			Aldebaran	291 34-9	N 16 25-8				
05	317 32-6	297 21-8	07-3	184 26-9	11-7	7 52-5	53-8	15 41-9	17-6										
T H U R S D A Y	06	332 35-0	312 22-6 N	7 07-7	199 28-0 N	11-3	22 55-0 S	18 53-8	30 44-4 S	20 17-6			Alioth	166 54-9	N 56 10-4				
	07	347 37-5	327 23-5	08-0	214 29-1	10-9	37 57-4	53-8	45 47-0	17-6			Alkaid	153 29-5	N 49 30-6				
	08	2 40-0	342 24-3	08-4	229 30-1	10-5	52 59-9	53-8	60 49-5	17-6			Al Na'ir	28 33-1	S 47 08-8				
	09	17 42-4	357 25-1	08-8	244 31-2	10-1	68 02-3	53-8	75 52-0	17-7			Alnilam	276 26-7	S 1 13-3				
	10	32 44-9	12 25-9	09-1	259 32-3	09-7	83 04-8	53-8	90 54-6	17-7			Alphard	218 34-9	S 8 29-6				
11	47 47-4	27 26-7	09-5	274 33-4	09-3	98 07-3	53-8	105 57-1	17-7										
	12	62 49-8	42 27-5 N	7 09-8	289 34-5 N	19 08-9	113 09-7 S	18 53-8	120 59-6 S	20 17-7			Alphecca	126 44-0	N 26 50-7				
	13	77 52-3	57 28-4	10-2	304 35-5	08-5	128 12-2	53-8	136 02-1	17-7			Alpheratz	358 24-4	N 28 52-4				
	14	92 54-7	72 29-2	10-6	319 36-6	08-1	143 14-6	53-9	151 04-7	17-7			Altair	62 46-4	N 8 45-9				
	15	107 57-2	87 30-0	10-9	334 37-7	07-7	158 17-1	53-9	166 07-2	17-8			Ankaa	353 54-8	S 42 30-8				
	16	122 59-7	102 30-8	11-3	349 38-8	07-3	173 19-6	53-9	181 09-7	17-8			Antares	113 14-2	S 26 20-8				
17	138 02-1	117 31-6	11-6	4 39-9	06-8	188 22-0	53-9	196 12-3	17-8										
	18	153 04-6	132 32-4 N	7 12-0	19 40-9 N	19 06-4	203 24-5 S	18 53-9	211 14-8 S	20 17-8			Arcturus	146 31-4	N 19 23-1				
	19	168 07-1	147 33-2	12-4	34 42-0	06-0	218 26-9	53-9	226 17-3	17-8			Atria	108 50-8	S 68 57-4				
	20	183 09-5	162 34-0	12-7	49 43-1	05-6	233 29-4	53-9	241 19-8	17-8			Avior	234 34-4	S 59 23-4				
	21	198 12-0	177 34-8	13-1	64 44-2	05-2	248 31-9	53-9	256 22-4	17-9			Bellatrix	279 14-6	N 6 18-8				
	22	213 14-5	192 35-6	13-5	79 45-2	04-8	263 34-3	53-9	271 24-9	17-9			Betelgeuse	271 44-2	N 7 23-9				
23	228 16-9	207 36-4	13-9	94 46-3	04-4	278 36-8	53-9	286 27-4	17-9										
26	00	243 19-4	222 37-2 N	7 14-2	109 47-4 N	19 04-0	293 39-3 S	18 53-9	301 30-0 S	20 17-9			Canopus	264 14-1	S 52 40-7				
	01	258 21-9	237 37-9	14-6	124 48-5	03-6	308 41-7	53-9	316 32-5	17-9			Capella	281 33-1	N 45 57-5				
	02	273 24-3	252 38-7	15-0	139 49-6	03-2	323 44-2	54-0	331 35-0	18-0			Deneb	49 58-1	N 45 08-3				
	03	288 26-8	267 39-5	15-3	154 50-6	02-8	338 46-6	54-0	346 37-6	18-0			Denebola	183 13-7	N 14 47-3				
	04	303 29-2	282 40-3	15-7	169 51-7	02-4	353 49-1	54-0	1 40-1	18-0			Diphda	349 35-6	S 18 11-9				
05	318 31-7	297 41-1	16-1	184 52-8	02-0	8 51-6	54-0	16 42-6	18-0										
	06	333 34-2	312 41-9 N	7 16-5	199 53-9 N	19 01-6	23 54-0 S	18 54-0	31 45-2 S	20 18-0			Dubhe	194 39-9	N 61 57-9				
	07	348 36-6	327 42-7	16-8	214 54-9	01-2	38 56-5	54-0	46 47-7	18-0			Elmath	279 02-8	N 28 34-4				
	08	3 39-1	342 43-4	17-2	229 56-0	00-7	53 59-0	54-0	61 50-2	18-1			Eltanin	91 04-0	N 51 29-6				
	09	18 41-6	357 44-2	17-6	244 57-1	19 00-3	69 01-4	54-0	76 52-8	18-1			Enif	34 25-7	N 9 41-7				
	10	33 44-0	12 45-0	18-0	259 58-2	18 59-9	84 03-9	54-0	91 55-3	18-1			Fomalhaut	16 07-5	S 29 49-5				
11	48 46-5	27 45-8	18-4	274 59-3	59-5	99 06-4	54-0	106 57-8	18-1										
F R I D A Y	12	63 49-0	42 46-5 N	7 18-8	290 00-3 N	18 59-1	114 08-8 S	18 54-0	122 00-4 S	20 18-1			Gacrux	172 44-4	S 56 54-0				
	13	78 51-4	57 47-3	19-1	305 01-4	58-7	129 11-3	54-1	137 02-9	18-1			Gienah	176 32-7	S 17 19-7				
	14	93 53-9	72 48-1	19-5	320 02-5	58-3	144 13-8	54-1	152 05-4	18-2			Hadar	149 43-2	S 60 11-3				
	15	108 56-3	87 48-9	19-9	335 03-6	57-9	159 16-2	54-1	167 07-9	18-2			Hamal	328 45-5	N 23 16-6				
	16	123 58-8	102 49-6	20-3	350 04-6	57-5	174 18-7	54-1	182 10-5	18-2			Kaus Aust.	84 35-7	S 34 24-1				
17	139 01-3	117 50-4	20-7	5 05-7	57-1	189 21-2	54-1	197 13-0	18-2										
	18	154 03-7	132 51-1 N	7 21-1	20 06-8 N	18 56-6	204 23-7 S	18 54-1	212 15-5 S	20 18-2			Kochab	137 17-3	N 74 19-0				
	19	169 06-2	147 51-9	21-5	35 07-9	56-2	219 26-1	54-1	227 18-1	18-2			Markab	14 17-6	N 14 59-7				
	20	184 08-7	162 52-7	21-9	50 09-0	55-8	234 28-6	54-1	242 20-6	18-3			Menkar	314 56-6	N 3 56-2				
	21	199 11-1	177 53-4	22-2	65 10-0	55-4	249 31-1	54-1	257 23-1	18-3			Menkent	148 53-7	S 36 10-9				
	22	214 13-6	192 54-2	22-6	80 11-1	55-0	264 33-5	54-1	272 25-7	18-3			Miaplacidus	221 48-2	S 69 33-8				
23	229 16-1	207 54-9	23-0	95 12-2	54-6	279 36-0	54-2	287 28-2	18-3										
27	00	244 18-5	222 55-7 N	7 23-4	110 13-3 N	18 54-2	294 38-5 S	18 54-2	302 30-8 S	20 18-3			Mirfak	309 37-3	N 49 43-3				
	01	259 21-0	237 56-5	23-8	125 14-3	53-8	309 40-9	54-2	317 33-3	18-4			Nunki	76 46-8	S 26 20-6				
	02	274 23-5	252 57-2	24-2	140 15-4	53-4	324 43-4	54-2	332 35-8	18-4			Peacock	54 21-0	S 56 51-3				
	03	289 25-9	267 58-0	24-6	155 16-5	52-9	339 45-9	54-2	347 38-4	18-4			Pollux	244 16-1	N 28 07-2				
	04	304 28-4	282 58-7	25-0	170 17-6	52-5	354 48-4	54-2	2 40-9	18-4			Procyon	245 41-2	N 5 19-4				
05	319 30-8	297 59-5	25-4	185 18-6	52-1	9 50-8	54-2	17 43-4	18-4										
	06	334 33-3	313 00-2 N	7 25-8	200 19-7 N	18 51-7	24 53-3 S	18 54-2	32 46-0 S	20 18-4			Rasalhague	96 42-7	N 12 35-3				
	07	349 35-8	328 00-9	26-2	215 20-8	51-3	39 55-8	54-2	47 48-5	18-5			Regulus	208 25-4	N 12 09-4				
	08	4 38-2	343 01-7	26-6	230 21-9	50-9	54 58-3	54-3	62 51-0	18-5			Rigel	281 50-2	S 8 14-9				
	09	19 40-7	358 02-4	27-0	245 23-0	50-5	70 00-7	54-3	77 53-6	18-5			Rigel Kent.	140 44-9	S 60 40-6				
	10	34 43-2	13 03-2	27-4	260 24-0	50-1	85 03-2	54-3	92 56-1	18-5			Sabik	102 57-4	S 15 40-6				
11	49 45-6	28 03-9	27-8	275 25-1	49-6	100 05-7	54-3	107 58-6	18-5										
S A T U R D A Y	12	64 48-1	43 04-6 N	7 28-2	290 26-2 N	18 49-2	115 08-2 S	18 54-3	123 01-2 S	20 18-6			Schedar	350 25-7	N 56 19-2				
	13	79 50-6	58 05-4	28-6	305 27-3	48-8	130 10-6	54-3	138 03-7	18-6			Shaula	97 15-0	N 37 04-5				
	14	94 53-0	73 06-1	29-1	320 28-3	48-4	145 13-1	54-3	153 06-3	18-6			Sirius	259 08-8	S 16 39-9				
	15	109 55-5	88 06-8	29-5	335 29-4	48-0	160 15-6	54-3	168 08-8	18-6			Spica	159 12-5	N 10 57-6				
	16	124 57-9	103 07-6	29-9	350 30-5	47-6	175 18-1	54-3	183 11-3	18-6			Suhail	223 21-5	S 43 16-9				
17	140 00-4	118 08-3	30-3	5 31-6	47-1	190 20-5	54-4	198 13-9	18-6										
	18	155 02-9	133 09-0 N	7 30-7	20 32-7 N	18 46-7	205 23-0 S	18 54-4	213 16-4 S	20 18-7			Vega	81 05-3	N 38 44-8				
	19	170 05-3	148 09-8	31-1	35 33-7	46-3	220 25-5	54-4	228 18-9	18-7			Zuben'ubi	137 48-7	S 15 52-9				
	20	185 07-8	163 10-5	31-5	50 34-8	45-9	235 28-0	54-4	243 21-5	18-7									
	21	200 10-3	178 11-2	31-9	65 35-9	45-5	250 30-5	54-4	258 24-0	18-7									
	22	215 12-7	193 11-9	32-4	80 37-0	45-1	265 32-9	54-4	273 26-6	18-7									
23	230 15-2	208 12-6	32-8	95 38-0	44-7	280 35-4	54-4	288 29-1	18-8										
Mer. Pass.		h m d 7 45-4			v 1-1 d 0-4			v 2-5 d 0-0			v 2-5 d 0-0			Mer. Pass. h m 9 09					
		v 0-8 d 0-4			v 1-1 d 0-4			v 2-5 d 0-0			v 2-5 d 0-0			Mer. Pass. h m 4 25					
		v 0-8 d 0-4			v 1-1 d 0-4			v 2-5 d 0-0			v 2-5 d 0-0			Mer. Pass. h m 3 53					

G.M.T.		SUN				MOON				Lat.	Twilight		Sun-rise	Moonrise															
		G.H.A.		Dec.		G.H.A.		Dec.			Naut.			Civil		25	26	27	28										
d	h	°	'	°	'	°	'	°	'	°	'	h	m	h	m	h	m	h	m	h	m	h	m						
25	00	180	48.4	N 20	51.9	62	00.9	14.1	N	2	25.1	10.1	55.4	N 72	□	□	□	14	19	16	02	17	51	19	49				
	01	195	48.4		52.4	76	34.0	14.2		2	15.0	10.1	55.5	N 70	□	□	□	14	19	15	56	17	37	19	24				
	02	210	48.3		52.8	91	07.2	14.1		2	04.9	10.1	55.5	68	///	///	00	21	14	19	15	50	17	25	19	05			
	03	225	48.2	..	53.3	105	40.3	14.0		1	54.8	10.2	55.5	66	///	///	01	39	14	19	15	46	17	16	18	49			
	04	240	48.2		53.7	120	13.3	14.1		1	44.6	10.2	55.5	64	///	///	02	14	14	19	15	42	17	08	18	37			
	05	255	48.1		54.2	134	46.4	14.0		1	34.4	10.1	55.6	62	///	01	00	02	40	14	19	15	39	17	02	18	26		
	06	270	48.1	N 20	54.6	149	19.4	14.0	N	1	24.3	10.2	55.6	60	///	01	45	03	00	14	19	15	36	16	56	18	18		
	07	285	48.0		55.1	163	52.4	14.0		1	14.1	10.2	55.6	N 58	///	02	13	03	16	14	18	15	33	16	51	18	10		
	08	300	47.9		55.5	178	25.4	14.0		1	03.9	10.3	55.6	56	00	54	02	35	03	30	14	18	15	31	16	46	18	05	
	09	315	47.9	..	56.0	192	58.4	13.9		0	53.6	10.2	55.7	54	01	35	02	52	03	42	14	18	15	29	16	42	17	55	
T H U R S D A Y	10	330	47.8		56.4	207	31.3	13.9		0	43.4	10.3	55.7	52	02	02	03	07	03	52	14	18	15	27	16	38	17	52	
	11	345	47.8		56.9	222	04.2	13.9		0	33.1	10.3	55.7	50	02	22	03	20	04	01	14	18	15	26	16	35	17	46	
	12		0	47.7	N 20	57.3	236	37.1	13.8	N	0	22.8	10.2	55.8	45	02	59	03	45	04	21	14	18	15	22	16	28	17	36
	13		15	47.6		57.8	251	09.9	13.8		0	12.6	10.3	55.8	N 40	03	25	04	05	04	36	14	18	15	19	16	22	17	27
	14		30	47.6		58.2	265	42.7	13.8	N	0	02.3	10.3	55.8	35	03	46	04	21	04	50	14	18	15	16	16	17	17	19
	15		45	47.5	..	58.7	280	15.5	13.7	S	0	08.0	10.4	55.8	30	04	02	04	34	05	01	14	18	15	14	16	13	17	13
	16		60	47.5		59.1	294	48.2	13.7		0	18.4	10.3	55.9	20	04	28	04	57	05	21	14	18	15	10	16	05	17	02
	17		75	47.4	20	59.6	309	20.9	13.7		0	28.7	10.3	55.9	N 10	04	48	05	15	05	38	14	18	15	07	15	58	16	52
	18		90	47.3	N 21	00.0	323	53.6	13.6	S	0	39.0	10.4	55.9	0	05	05	05	31	05	53	14	18	15	04	15	52	16	43
	19		105	47.3		00.5	338	26.2	13.6		0	49.4	10.3	56.0	S 10	05	21	05	46	06	09	14	18	15	01	15	46	16	33
F R I D A Y	20		120	47.2		00.9	352	58.8	13.6		0	59.7	10.4	56.0	20	05	35	06	02	06	25	14	18	14	57	15	39	16	23
	21		135	47.1	..	01.3	7	31.4	13.5		1	10.1	10.4	56.0	30	05	49	06	18	06	44	14	18	14	54	15	31	16	12
	22		150	47.1		01.8	22	03.9	13.5		1	20.5	10.4	56.0	35	05	56	06	27	06	55	14	18	14	52	15	27	16	06
	23		165	47.0	02.2	36	36.4	13.5		1	30.9	10.3	56.1	40	06	04	06	38	07	08	14	18	14	49	15	22	15	59	
	00		180	47.0	N 21	02.7	51	08.9	13.4	S	1	41.2	10.4	56.1	45	06	13	06	49	07	22	14	18	14	46	15	17	15	51
	01		195	46.9		03.1	65	41.3	13.4		1	51.6	10.4	56.1	S 50	06	23	07	03	07	40	14	18	14	43	15	10	15	41
	02		210	46.8		03.6	80	13.7	13.3		2	02.0	10.4	56.2	52	06	27	07	10	07	49	14	18	14	42	15	07	15	36
	03		225	46.8	..	04.0	94	46.0	13.3		2	12.4	10.4	56.2	54	06	32	07	17	07	58	14	18	14	40	15	04	15	31
	04		240	46.7		04.4	109	18.3	13.2		2	22.8	10.4	56.2	56	06	37	07	24	08	09	14	18	14	38	15	00	15	25
	05		255	46.6		04.9	123	50.5	13.2		2	33.2	10.4	56.3	58	06	42	07	33	08	21	14	18	14	36	14	56	15	19
S A T U R D A Y	06		270	46.6	N 21	05.3	138	22.7	13.2	S	2	43.6	10.4	56.3	S 60	06	48	07	42	08	35	14	18	14	34	14	52	15	12
	07		285	46.5		05.7	152	54.9	13.1		2	54.0	10.4	56.3															
	08		300	46.4		06.2	167	27.0	13.1		3	04.4	10.4	56.3	Lat.	Sun-set	Twilight		Moonset										
	09		315	46.4	..	06.6	181	59.1	13.0		3	14.8	10.4	56.4			Civil	Naut.	25	26	27	28							
	10		330	46.3		07.0	196	31.1	13.0		3	25.2	10.4	56.4	°	h	m	h	m	h	m	h	m	h	m	h	m	h	m
	11		345	46.2		07.5	211	03.1	12.9		3	35.6	10.3	56.4	N 72	□	□	□	02	20	02	12	02	05	01	56			
	12			0	46.2	N 21	07.9	225	35.0	12.9	S	3	45.9	10.4	56.5	N 70	□	□	□	02	17	02	15	02	13	02	12	02	12
	13		15	46.1		08.3	240	06.9	12.8		3	56.3	10.4	56.5	68	0□	□	□	02	15	02	18	02	21	02	21	02	25	
	14		30	46.0		08.8	254	38.7	12.8		4	06.7	10.4	56.5	66	22	19	///	///	02	13	02	20	02	27	02	36		
	15		45	46.0	..	09.2	269	10.5	12.7		4	17.1	10.3	56.6	64	21	42	///	///	02	12	02	21	02	32	02	45		
16		60	45.9		09.6	283	42.2	12.7		4	27.4	10.4	56.6	62	21	16	23	00	///	02	10	02	23	02	36	02	52		
S A T U R D A Y	17		75	45.8		10.1	298	13.9	12.6		4	37.8	10.3	56.6	60	20	56	22	12	///	02	09	02	24	02	40	02	59	
	18		90	45.8	N 21	10.5	312	45.5	12.6	S	4	48.1	10.3	56.7	N 58	20	39	21	42	///	02	08	02	25	02	44	03	05	
	19		105	45.7		10.9	327	17.1	12.5		4	58.4	10.3	56.7	56	20	25	21	21	23	05	02	07	02	26	02	47	03	10
	20		120	45.6		11.3	341	48.6	12.4		5	08.7	10.4	56.7	54	20	13	21	03	22	21	02	06	02	27	02	50	03	15
	21		135	45.6	..	11.8	356	20.0	12.4		5	19.1	10.2	56.8	52	20	03	20	48	21	54	02	06	02	28	02	52	03	19
	22		150	45.5		12.2	10	51.4	12.4		5	29.3	10.3	56.8	50	19	53	20	35	21	33	02	05	02	29	02	55	03	23
	23		165	45.4		12.6	25	22.8	12.3		5	39.6	10.3	56.8	45	19	34	20	09	20	56	02	03	02	31	03	00	03	32
	00		180	45.4	N 21	13.1	39	54.1	12.2	S	5	49.9	10.2	56.9	N 40	19	18	19	50	20	29	02	02	02	32	03	04	03	39
	01		195	45.3		13.5	54	25.3	12.2		6	00.1	10.3	56.9	35	19	05	19	33	20	09	02	01	02	34	03	08	03	45
	02		210	45.2		13.9	68	56.5	12.1		6	10.4	10.2	56.9	30	18	53	19	20	19	52	02	00	02	35	03	11	03	50
03		225	45.2	..	14.3	83	27.6	12.1		6	20.6	10.2	57.0	20	18	33	18	57	19	26	01	58	02	37	03	17	04	00	
04		240	45.1		14.7	97	58.7	12.0		6	30.8	10.2	57.0	N 10	18	16	18	39	19	06	01	56	02	38	03	22	04	08	
05		255	45.0		15.2	112	29.7	12.0		6	41.0	10.1	57.0	0	18	01	18	23	18	48	01	55	02	40	03	27	04	16	
S A T U R D A Y	06		270	45.0	N 21	15.6	127	00.7	11.8	S	6	51.1	10.1	57.0	S 10	17	45	18	07	18	33	01	53	02	41	03	31	04	23
	07		285	44.9		16.0	141	31.5	11.9		7	01.2	10.2	57.1	20	17	28	17	52	18	19	01	52	02	43	03	36	04	32
	08		300	44.8		16.4	156	02.4	11.7		7	11.4	10.0	57.1	30	17	10	17	35	18	05	01	50	02	45	03	42	04	41
	09		315	44.7	..	16.9	170	33.1	11.7		7	21.4	10.1	57.1	35	16	59	17	26	17	57	01	49	02	46	03	45	04	47
	10		330	44.7		17.																							

G.M.T.	ARIES			VENUS -4.1			MARS +1.6			JUPITER -2.1			SATURN +0.6			STARS		
	G.H.A.	G.H.A.	Dec.	G.H.A.	G.H.A.	Dec.	G.H.A.	G.H.A.	Dec.	G.H.A.	G.H.A.	Dec.	G.H.A.	G.H.A.	Dec.	Name	S.H.A.	Dec.
28	^d 245 17.7	^d 223 13.4	^N 7 33.2	^d 110 39.1	^N 18 44.2	^d 295 37.9	^S 18 54.4	^d 303 31.6	^S 20 18.8	^d 310 40.4	^S 18 54.5	^d 318 34.2	^S 18 18.8	^d 333 36.7	^S 18 18.8	Acamar	315 48.6	^S 40 27.6
01	^m 260 20.1	^m 238 14.1	^m 33.6	^m 125 40.2	^m 43.8	^m 310 40.4	^m 54.5	^m 318 34.2	^m 18.8	^m 310 40.4	^m 54.5	^m 318 34.2	^m 18.8	^m 333 36.7	^m 18.8	Achernar	335 56.6	^S 57 25.9
02	^m 275 22.6	^m 253 14.8	^m 34.0	^m 140 41.3	^m 43.4	^m 325 42.9	^m 54.5	^m 333 36.7	^m 18.8	^m 325 42.9	^m 54.5	^m 333 36.7	^m 18.8	^m 348 39.2	^m 18.8	Acrux	173 52.9	^S 62 53.3
03	^m 290 25.1	^m 268 15.5	^m 34.4	^m 155 42.3	^m 43.0	^m 340 45.3	^m 54.5	^m 348 39.2	^m 18.8	^m 340 45.3	^m 54.5	^m 348 39.2	^m 18.8	^m 354 41.8	^m 18.9	Adhara	255 43.8	^S 28 55.4
04	^m 305 27.5	^m 283 16.2	^m 34.9	^m 170 43.4	^m 42.6	^m 355 47.8	^m 54.5	^m 354 41.8	^m 18.9	^m 355 47.8	^m 54.5	^m 354 41.8	^m 18.9	^m 361 44.3	^m 18.9	Aldebaran	291 34.9	^N 16 25.8
05	^m 320 30.0	^m 298 16.9	^m 35.3	^m 185 44.5	^m 42.2	^m 10 50.3	^m 54.5	^m 18 44.3	^m 18.9	^m 10 50.3	^m 54.5	^m 18 44.3	^m 18.9	^m 368 46.9	^m 18.9			
06	^m 335 32.4	^m 313 17.6	^N 7 35.7	^m 200 45.6	^N 18 41.7	^m 25 52.8	^S 18 54.5	^m 33 46.9	^S 20 18.9	^m 25 52.8	^S 18 54.5	^m 33 46.9	^S 20 18.9	^m 349 49.4	^m 18.9	Alioth	166 54.9	^N 56 10.4
07	^m 350 34.9	^m 328 18.3	^m 36.1	^m 215 46.6	^m 41.3	^m 40 55.3	^m 54.5	^m 48 49.4	^m 18.9	^m 40 55.3	^m 54.5	^m 48 49.4	^m 18.9	^m 63 51.9	^m 18.9	Alkaid	153 29.6	^N 49 30.6
08	^m 5 37.4	^m 343 19.1	^m 36.6	^m 230 47.7	^m 40.9	^m 55 57.7	^m 54.5	^m 63 51.9	^m 18.9	^m 55 57.7	^m 54.5	^m 63 51.9	^m 18.9	^m 78 54.5	^m 19.0	Al Na'ir	28 33.1	^S 47 08.7
09	^m 20 39.8	^m 358 19.8	^m 37.0	^m 245 48.8	^m 40.5	^m 71 00.2	^m 54.6	^m 78 54.5	^m 19.0	^m 71 00.2	^m 54.6	^m 78 54.5	^m 19.0	^m 93 57.0	^m 19.0	Alnilam	276 26.7	^S 1 13.7
10	^m 35 42.3	^m 13 20.5	^m 37.4	^m 260 49.9	^m 40.1	^m 86 02.7	^m 54.6	^m 93 57.0	^m 19.0	^m 86 02.7	^m 54.6	^m 93 57.0	^m 19.0	^m 108 59.6	^m 19.0	Alphard	218 34.9	^S 8 29.6
11	^m 50 44.8	^m 28 21.2	^m 37.8	^m 275 51.0	^m 39.6	^m 101 05.2	^m 54.6	^m 108 59.6	^m 19.0	^m 101 05.2	^m 54.6	^m 108 59.6	^m 19.0	^m 124 02.1	^m 19.0	Alphecca	126 44.0	^N 26 50.8
12	^m 65 47.2	^m 43 21.9	^N 7 38.3	^m 290 52.0	^N 18 39.2	^m 116 07.7	^S 18 54.6	^m 124 02.1	^S 20 19.0	^m 116 07.7	^S 18 54.6	^m 124 02.1	^S 20 19.0	^m 139 04.6	^m 19.0	Alpheratz	358 24.4	^N 28 52.4
13	^m 80 49.7	^m 58 22.6	^m 38.7	^m 305 53.1	^m 38.8	^m 131 10.2	^m 54.6	^m 139 04.6	^m 19.0	^m 131 10.2	^m 54.6	^m 139 04.6	^m 19.0	^m 154 07.2	^m 19.0	Altair	62 46.4	^N 8 45.9
14	^m 95 52.2	^m 73 23.3	^m 39.1	^m 320 54.2	^m 38.4	^m 146 12.6	^m 54.6	^m 154 07.2	^m 19.0	^m 146 12.6	^m 54.6	^m 154 07.2	^m 19.0	^m 169 09.7	^m 19.1	Ankaa	353 54.8	^S 42 30.8
15	^m 110 54.6	^m 88 24.0	^m 39.5	^m 335 55.3	^m 38.0	^m 161 15.1	^m 54.6	^m 169 09.7	^m 19.1	^m 161 15.1	^m 54.6	^m 169 09.7	^m 19.1	^m 184 12.3	^m 19.1	Antares	113 14.2	^S 26 20.8
16	^m 125 57.1	^m 103 24.7	^m 40.0	^m 350 56.3	^m 37.6	^m 176 17.6	^m 54.7	^m 184 12.3	^m 19.1	^m 176 17.6	^m 54.7	^m 184 12.3	^m 19.1	^m 199 14.8	^m 19.1			
17	^m 140 59.6	^m 118 25.3	^m 40.4	^m 5 57.4	^m 37.1	^m 191 20.1	^m 54.7	^m 199 14.8	^m 19.1	^m 191 20.1	^m 54.7	^m 199 14.8	^m 19.1	^m 214 17.3	^m 19.1	Arcturus	146 31.4	^N 19 23.1
18	^m 156 02.0	^m 133 26.0	^N 7 40.8	^m 20 58.5	^N 18 36.7	^m 206 22.6	^S 18 54.7	^m 214 17.3	^S 20 19.1	^m 206 22.6	^S 18 54.7	^m 214 17.3	^S 20 19.1	^m 229 19.9	^m 19.1	Atria	108 50.8	^S 68 57.4
19	^m 171 04.5	^m 148 26.7	^m 41.3	^m 35 59.6	^m 36.3	^m 221 25.1	^m 54.7	^m 229 19.9	^m 19.1	^m 221 25.1	^m 54.7	^m 229 19.9	^m 19.1	^m 244 22.4	^m 19.2	Avior	234 34.4	^S 59 23.4
20	^m 186 06.9	^m 163 27.4	^m 41.7	^m 51 00.6	^m 35.9	^m 236 27.6	^m 54.7	^m 244 22.4	^m 19.2	^m 236 27.6	^m 54.7	^m 244 22.4	^m 19.2	^m 259 25.0	^m 19.2	Bellatrix	279 14.6	^N 6 18.8
21	^m 201 09.4	^m 178 28.1	^m 42.1	^m 66 01.7	^m 35.5	^m 251 30.0	^m 54.7	^m 259 25.0	^m 19.2	^m 251 30.0	^m 54.7	^m 259 25.0	^m 19.2	^m 274 27.5	^m 19.2	Betelgeuse	271 44.2	^N 7 23.9
22	^m 216 11.9	^m 193 28.8	^m 42.6	^m 81 02.8	^m 35.0	^m 266 32.5	^m 54.7	^m 274 27.5	^m 19.2	^m 266 32.5	^m 54.7	^m 274 27.5	^m 19.2	^m 289 30.1	^m 19.2			
23	^m 231 14.3	^m 208 29.5	^m 43.0	^m 96 03.9	^m 34.6	^m 281 35.0	^m 54.8	^m 289 30.1	^m 19.2	^m 281 35.0	^m 54.8	^m 289 30.1	^m 19.2	^m 304 32.6	^m 19.2	Canopus	264 14.1	^S 52 40.7
29	^m 246 16.8	^m 223 30.2	^N 7 43.4	^m 111 04.9	^N 18 34.2	^m 296 37.5	^S 18 54.8	^m 304 32.6	^S 20 19.2	^m 296 37.5	^S 18 54.8	^m 304 32.6	^S 20 19.2	^m 319 35.1	^m 19.3	Capella	281 33.1	^N 45 57.5
01	^m 261 19.3	^m 238 30.8	^m 43.9	^m 126 06.0	^m 33.8	^m 311 40.0	^m 54.8	^m 319 35.1	^m 19.3	^m 311 40.0	^m 54.8	^m 319 35.1	^m 19.3	^m 334 37.7	^m 19.3	Deneb	49 58.0	^N 45 08.3
02	^m 276 21.7	^m 253 31.5	^m 44.3	^m 141 07.1	^m 33.3	^m 326 42.5	^m 54.8	^m 334 37.7	^m 19.3	^m 326 42.5	^m 54.8	^m 334 37.7	^m 19.3	^m 349 40.2	^m 19.3	Denebola	183 13.7	^N 14 47.3
03	^m 291 24.2	^m 268 32.2	^m 44.8	^m 156 08.2	^m 32.9	^m 341 45.0	^m 54.8	^m 349 40.2	^m 19.3	^m 341 45.0	^m 54.8	^m 349 40.2	^m 19.3	^m 4 42.8	^m 19.3	Diphda	349 35.6	^S 18 11.9
04	^m 306 26.7	^m 283 32.9	^m 45.2	^m 171 09.2	^m 32.5	^m 356 47.5	^m 54.8	^m 4 42.8	^m 19.3	^m 356 47.5	^m 54.8	^m 4 42.8	^m 19.3	^m 19 45.3	^m 19.3			
05	^m 321 29.1	^m 298 33.6	^m 45.7	^m 186 10.3	^m 32.1	^m 11 49.9	^m 54.8	^m 19 45.3	^m 19.3	^m 11 49.9	^m 54.8	^m 19 45.3	^m 19.3	^m 34 47.9	^m 19.4	Dubhe	194 39.9	^N 61 57.9
06	^m 336 31.6	^m 313 34.2	^N 7 46.1	^m 201 11.4	^N 18 31.7	^m 26 52.4	^S 18 54.9	^m 34 47.9	^S 20 19.4	^m 26 52.4	^S 18 54.9	^m 34 47.9	^S 20 19.4	^m 49 50.4	^m 19.4	Elnath	279 02.8	^N 28 34.4
07	^m 351 34.0	^m 328 34.9	^m 46.5	^m 216 12.5	^m 31.2	^m 41 54.9	^m 54.9	^m 49 50.4	^m 19.4	^m 41 54.9	^m 54.9	^m 49 50.4	^m 19.4	^m 64 52.9	^m 19.4	Eltanin	91 03.9	^N 51 29.6
08	^m 6 36.5	^m 343 35.6	^m 47.0	^m 231 13.5	^m 30.8	^m 56 57.4	^m 54.9	^m 64 52.9	^m 19.4	^m 56 57.4	^m 54.9	^m 64 52.9	^m 19.4	^m 79 55.5	^m 19.4	Enif	34 25.7	^N 9 41.8
09	^m 21 39.0	^m 358 36.2	^m 47.4	^m 246 14.6	^m 30.4	^m 71 59.9	^m 54.9	^m 79 55.5	^m 19.4	^m 71 59.9	^m 54.9	^m 79 55.5	^m 19.4	^m 94 58.0	^m 19.4	Fomalhaut	16 07.4	^S 29 49.5
10	^m 36 41.4	^m 13 36.9	^m 47.9	^m 261 15.7	^m 30.0	^m 87 02.4	^m 54.9	^m 94 58.0	^m 19.4	^m 87 02.4	^m 54.9	^m 94 58.0	^m 19.4	^m 110 00.6	^m 19.5			
11	^m 51 43.9	^m 28 37.6	^m 48.3	^m 276 16.8	^m 29.5	^m 102 04.9	^m 54.9	^m 110 00.6	^m 19.5	^m 102 04.9	^m 54.9	^m 110 00.6	^m 19.5	^m 125 03.1	^m 19.5	Gacrux	172 44.5	^S 56 54.0
12	^m 66 46.4	^m 43 38.2	^N 7 48.8	^m 291 17.9	^N 18 29.1	^m 117 07.4	^S 18 54.9	^m 125 03.1	^S 20 19.5	^m 117 07.4	^S 18 54.9	^m 125 03.1	^S 20 19.5	^m 140 05.7	^m 19.5	Gienah	176 32.7	^S 17 19.7
13	^m 81 48.8	^m 58 38.9	^m 49.2	^m 306 18.9	^m 28.7	^m 132 09.9	^m 55.0	^m 140 05.7	^m 19.5	^m 306 18.9	^m 28.7	^m 132 09.9	^m 55.0	^m 155 08.2	^m 19.5	Hadar	149 43.2	^S 60 11.3
14	^m 96 51.3	^m 73 39.6	^m 49.7	^m 321 20.0	^m 28.3	^m 147 12.4	^m 55.0	^m 155 08.2	^m 19.5	^m 321 20.0	^m 28.3	^m 147 12.4	^m 55.0	^m 170 10.8	^m 19.5	Hamal	328 45.5	^N 2

G.M.T.	ARIES			VENUS -4.1			MARS +1.6			JUPITER -2.1			SATURN +0.6			STARS		
	G.H.A.	G.H.A.	Dec.	G.H.A.	G.H.A.	Dec.	G.H.A.	G.H.A.	Dec.	G.H.A.	G.H.A.	Dec.	G.H.A.	G.H.A.	Dec.	Name	S.H.A.	Dec.
d h																		
31 00	248 15.1	224 01.3	N 8 05.4	111 56.6	N18 13.8		298 37.3	S18 55.6		306 34.8	S20 20.2		Acamar	315 48.6	S 40 27.6			
01	263 17.5	239 01.9	05.9	126 57.6	13.3		313 39.8	55.6		321 37.4	20.2		Acernar	335 56.5	S 57 25.9			
02	278 20.0	254 02.5	06.4	141 58.7	12.9		328 42.3	55.6		336 39.9	20.3		Acruux	173 53.0	S 62 53.4			
03	293 22.5	269 03.1	06.9	156 59.8	12.5		343 44.8	55.6		351 42.5	20.3		Adhara	255 43.8	S 28 55.4			
04	308 24.9	284 03.7	07.4	172 00.8	12.0		358 47.3	55.6		6 45.0	20.3		Aldebaran	291 34.9	N 16 25.8			
05	323 27.4	299 04.4	07.8	187 01.9	11.6		13 49.8	55.7		21 47.6	20.3							
06	338 29.9	314 05.0	N 8 08.3	202 03.0	N18 11.2		28 52.3	S18 55.7		36 50.1	S20 20.3		Alioth	166 55.0	N 56 10.4			
07	353 32.3	329 05.6	08.8	217 04.1	10.8		43 54.8	55.7		51 52.7	20.4		Alkaid	153 29.6	N 49 30.6			
08	8 34.8	344 06.2	09.3	232 05.1	10.3		58 57.4	55.7		66 55.2	20.4		Al Na'ir	28 33.1	S 47 08.7			
09	23 37.3	359 06.8	09.8	247 06.2	09.9		73 59.9	55.7		81 57.8	20.4		Alnilam	276 26.7	S 1 13.7			
10	38 39.7	14 07.4	10.3	262 07.3	09.5		89 02.4	55.8		97 00.3	20.4		Alphard	218 34.9	S 8 29.6			
11	53 42.2	29 08.0	10.7	277 08.4	09.0		104 04.9	55.8		112 02.9	20.4							
12	68 44.6	44 08.6	N 8 11.2	292 09.4	N18 08.6		119 07.4	S18 55.8		127 05.4	S20 20.5		Alphecca	126 44.0	N 26 50.8			
13	83 47.1	59 09.2	11.7	307 10.5	08.2		134 09.9	55.8		142 08.0	20.5		Alpheratz	358 24.4	N 28 52.4			
14	98 49.6	74 09.8	12.2	322 11.6	07.7		149 12.4	55.8		157 10.5	20.5		Altair	62 46.4	N 8 45.9			
15	113 52.0	89 10.4	12.7	337 12.7	07.3		164 14.9	55.9		172 13.1	20.5		Ankaa	353 54.7	S 42 30.8			
16	128 54.5	104 11.0	13.2	352 13.7	06.9		179 17.4	55.9		187 15.6	20.6		Antares	113 14.2	S 26 20.8			
17	143 57.0	119 11.6	13.7	7 14.8	06.4		194 19.9	55.9		202 18.2	20.6							
18	158 59.4	134 12.2	N 8 14.2	22 15.9	N18 06.0		209 22.4	S18 55.9		217 20.7	S20 20.6		Arcturus	146 31.4	N 19 23.1			
19	174 01.9	149 12.7	14.6	37 17.0	05.6		224 24.9	55.9		232 23.3	20.6		Atria	108 50.8	S 68 57.4			
20	189 04.4	164 13.3	15.1	52 18.0	05.1		239 27.5	56.0		247 25.9	20.6		Avior	234 34.5	S 59 23.4			
21	204 06.8	179 13.9	15.6	67 19.1	04.7		254 30.0	56.0		262 28.4	20.7		Bellatrix	279 14.6	N 6 18.8			
22	219 09.3	194 14.5	16.1	82 20.2	04.3		269 32.5	56.0		277 31.0	20.7		Betelgeuse	271 44.2	N 7 23.9			
23	234 11.8	209 15.1	16.6	97 21.2	03.8		284 35.0	56.0		292 33.5	20.7							
1 00	249 14.2	224 15.7	N 8 17.1	112 22.3	N18 03.4		299 37.5	S18 56.0		307 36.1	S20 20.7		Canopus	264 14.1	S 52 40.7			
01	264 16.7	239 16.3	17.6	127 23.4	03.0		314 40.0	56.1		322 38.6	20.8		Capella	281 33.1	N 45 57.5			
02	279 19.1	254 16.8	18.1	142 24.5	02.5		329 42.5	56.1		337 41.2	20.8		Deneb	49 58.0	N 45 08.3			
03	294 21.6	269 17.4	18.6	157 25.5	02.1		344 45.0	56.1		352 43.7	20.8		Denebola	183 13.7	N 14 47.4			
04	309 24.1	284 18.0	19.1	172 26.6	01.7		359 47.6	56.1		7 46.3	20.8		Diphda	349 35.5	S 18 11.9			
05	324 26.5	299 18.6	19.6	187 27.7	01.2		14 50.1	56.1		22 48.8	20.8							
06	339 29.0	314 19.2	N 8 20.1	202 28.8	N18 00.8		29 52.6	S18 56.2		37 51.4	S20 20.9		Dubhe	194 40.0	N 61 57.9			
07	354 31.5	329 19.7	20.6	217 29.8	18 00.4		44 55.1	56.2		52 53.9	20.9		El Nath	279 02.8	N 28 34.4			
08	9 33.9	344 20.3	21.1	232 30.9	17 59.9		59 57.6	56.2		67 56.5	20.9		Elkanin	91 03.9	N 51 29.6			
09	24 36.4	359 20.9	21.6	247 32.0	17 59.5		75 00.1	56.2		82 59.1	20.9		Enif	34 25.7	N 9 41.8			
10	39 38.9	14 21.5	22.1	262 33.1	59.0		90 02.6	56.2		98 01.6	20.9		Fomalhaut	16 07.4	S 29 49.5			
11	54 41.3	29 22.0	22.6	277 34.1	58.6		105 05.2	56.3		113 04.2	21.0							
12	69 43.8	44 22.6	N 8 23.1	292 35.2	N17 58.2		120 07.7	S18 56.3		128 06.7	S20 21.0		Gacrux	172 44.5	S 56 54.0			
13	84 46.3	59 23.2	23.6	307 36.3	57.7		135 10.2	56.3		143 09.3	21.0		Gienah	176 32.7	S 17 19.7			
14	99 48.7	74 23.7	24.1	322 37.4	57.3		150 12.7	56.3		158 11.8	21.0		Hadar	149 43.3	S 60 11.4			
15	114 51.2	89 24.3	24.6	337 38.4	56.9		165 15.2	56.4		173 14.4	21.1		Hamal	328 45.5	N 23 16.6			
16	129 53.6	104 24.9	25.1	352 39.5	56.4		180 17.7	56.4		188 16.9	21.1		Kaus Aust.	84 35.7	S 34 24.1			
17	144 56.1	119 25.4	25.6	7 40.6	56.0		195 20.2	56.4		203 19.5	21.1							
18	159 58.6	134 26.0	N 8 26.1	22 41.6	N17 55.6		210 22.8	S18 56.4		218 22.1	S20 21.1		Kochab	137 17.3	N 74 19.1			
19	175 01.0	149 26.5	26.7	37 42.7	55.1		225 25.3	56.4		233 24.6	21.1		Markab	14 17.6	N 14 59.7			
20	190 03.5	164 27.1	27.2	52 43.8	54.7		240 27.8	56.5		248 27.2	21.2		Menkar	314 56.5	N 3 56.2			
21	205 06.0	179 27.7	27.7	67 44.9	54.2		255 30.3	56.5		263 29.7	21.2		Menkent	148 53.7	S 36 10.9			
22	220 08.4	194 28.2	28.2	82 45.9	53.8		270 32.8	56.5		278 32.3	21.2		Miaplacidus	221 48.3	S 69 33.8			
23	235 10.9	209 28.8	28.7	97 47.0	53.4		285 35.4	56.5		293 34.8	21.2							
2 00	250 13.4	224 29.3	N 8 29.2	112 48.1	N17 52.9		300 37.9	S18 56.6		308 37.4	S20 21.3		Mirfak	309 37.2	N 49 43.3			
01	265 15.8	239 29.9	29.7	127 49.2	52.5		315 40.4	56.6		323 40.0	21.3		Nunki	76 46.8	S 26 20.6			
02	280 18.3	254 30.4	30.2	142 50.2	52.0		330 42.9	56.6		338 42.5	21.3		Peacock	54 20.9	S 56 51.4			
03	295 20.8	269 31.0	30.7	157 51.3	51.6		345 45.4	56.6		353 45.1	21.3		Pollux	244 16.1	N 28 07.2			
04	310 23.2	284 31.5	31.3	172 52.4	51.2		0 48.0	56.7		8 47.6	21.3		Procyon	245 41.2	N 5 19.4			
05	325 25.7	299 32.1	31.8	187 53.5	50.7		15 50.5	56.7		23 50.2	21.4							
06	340 28.1	314 32.6	N 8 32.3	202 54.5	N17 50.3		30 53.0	S18 56.7		38 52.7	S20 21.4		Rasalhague	96 42.7	N 12 35.3			
07	355 30.6	329 33.2	32.8	217 55.6	49.9		45 55.5	56.7		53 55.3	21.4		Regulus	208 25.5	N 12 09.4			
08	10 33.1	344 33.7	33.3	232 56.7	49.4		60 58.0	56.7		68 57.9	21.4		Rigel	281 50.2	S 8 14.9			
09	25 35.5	359 34.2	33.8	247 57.8	49.0		76 00.6	56.8		84 00.4	21.5		Rigel Kent.	140 44.9	S 60 40.6			
10	40 38.0	14 34.8	34.4	262 58.8	48.5		91 03.1	56.8		99 03.0	21.5		Sabik	102 57.4	S 15 40.6			
11	55 40.5	29 35.3	34.9	277 59.9	48.1		106 05.6	56.8		114 05.5	21.5							
12	70 42.9	44 35.9	N 8 35.4	293 01.0	N17 47.6		121 08.1	S18 56.8		129 08.1	S20 21.5		Schedar	350 25.7	N 56 19.2			
13	85 45.4	59 36.4	35.9	308 02.0	47.2		136 10.7	56.9		144 10.7	21.6		Shaula	97 15.0	S 37 04.5			
14	100 47.9	74 36.9	36.4	323 03.1	46.8		151 13.2	56.9		159 13.2	21.6		Sirius	259 08.8	S 16 39.9			
15	115 50.3	89 37.5	37.0	338 04.2	46.3		166 15.7	56.9		174 15.8	21.6		Spica	159 12.6	S 10 57.6			
16	130 52.8	104 38.0	37.5	353 05.3	45.9		181 18.2	56.9		189 18.3	21.6		Suhail	223 21.6	S 43 16.8			
17	145 55.3	119 38.5	38.0	8 06.3	45.4		196 20.8	57.0		204 20.9	21.6							
18	160 57.7	134 39.1	N 8 38.5	23 07.4	N17 45.0		211 23.3	S18 57.0		219 23.5	S20 21.7		Vega	81 05.2	N 38 44.8			
19	176 00.2	149 39.6	39.1	38 08.5	44.6		226 25.8	57.0		234 26.0	21.7		Zuben'ubi	137 48.7	S 15 52.9			
20	191 02.6	164 40.1	39.6	53 09.5	44.1		241 28.3	57.0		249 28.6	21.7							
21	206 05.1	179 40.6	40.1	68 10.6	43.7		256 30.9	57.1		264 31.1	21.7							
22	221 07.6	194 41.2	40.6	83 11.7	43.2													

G.M.T.		SUN		MOON				Lat.	Twilight		Sun-rise	Moonrise								
		G.H.A.	Dec.	G.H.A.	<i>v</i>	Dec.	<i>d</i>		H.P.	Naut.		Civil	31	1	2	3				
d	h	°	'	°	'	°	'	°	'	°	'	h	m	h	m	h	m	h	m	
WEDNESDAY	31 00	180	37.9	N21	50.9	348	37.1	5.7	S18	21.0	3.6	59.6	N 72	□	□	□	■	■	02 25	
	01	195	37.8		51.3	3	01.8	5.6	18	24.6	3.4	59.6	N 70	□	□	□	24 44	00 44	01 23	
	02	210	37.7		51.6	17	26.4	5.6	18	28.0	3.3	59.6	68	□	□	□	23 43	24 33	00 33	
	03	225	37.6	••	52.0	31	51.0	5.6	18	31.3	3.2	59.6	66	///	///	01 13	23 09	24 02	00 02	
	04	240	37.5		52.3	46	15.6	5.5	18	34.5	3.1	59.7	64	///	///	01 58	22 44	23 38	24 16	
	05	255	37.5		52.7	60	40.1	5.4	18	37.6	3.0	59.7	62	///	00 01	02 28	22 24	23 20	24 01	
	06												60	///	01 27	02 50	22 08	23 04	23 47	
	07	270	37.4	N21	53.1	75	04.5	5.5	S18	40.6	2.8	59.7	N 58	///	02 01	03 07	21 54	22 51	23 36	
	08	285	37.3		53.4	89	29.0	5.4	18	43.4	2.7	59.7	56	00 01	02 25	03 22	21 43	22 40	23 26	
	09	300	37.2		53.8	103	53.4	5.3	18	46.1	2.5	59.7	54	01 19	02 44	03 35	21 32	22 30	23 17	
THURSDAY	10 00	315	37.1	••	54.1	118	17.7	5.3	18	48.6	2.5	59.7	52	01 50	03 00	03 46	21 23	22 21	23 10	
	01	330	37.0		54.5	132	42.0	5.3	18	51.1	2.3	59.7	50	02 13	03 13	03 56	21 15	22 13	23 03	
	02	345	36.9		54.8	147	06.3	5.2	18	53.4	2.2	59.8	45	02 53	03 40	04 17	20 58	21 56	22 48	
	13 00		0 36.8	N21	55.2	161	30.5	5.3	S18	55.6	2.0	59.8	N 40	03 21	04 01	04 33	20 43	21 42	22 35	
	14	15	36.7		55.6	175	54.8	5.1	18	57.6	2.0	59.8	35	03 42	04 18	04 47	20 31	21 31	22 25	
	15	30	36.7		55.9	190	18.9	5.2	18	59.6	1.8	59.8	30	04 00	04 32	04 59	20 21	21 21	22 16	
	16	45	36.6	••	56.3	204	43.1	5.1	19	01.4	1.6	59.8	20	04 27	04 56	05 20	20 03	21 03	21 59	
	17	60	36.5		56.6	219	07.2	5.1	19	03.0	1.6	59.8	N 10	04 48	05 15	05 38	19 47	20 47	21 45	
	18	75	36.4		57.0	233	31.3	5.1	19	04.6	1.4	59.8	0	05 06	05 32	05 54	19 33	20 33	21 32	
	19 00	90	36.3	N21	57.3	247	55.4	5.1	S19	06.0	1.2	59.8	S 10	05 22	05 48	06 10	19 18	20 18	21 19	
FRIDAY	20 01	105	36.2		57.7	262	19.5	5.0	19	07.2	1.2	59.9	20	05 37	06 04	06 28	19 02	20 03	21 05	
	21 02	120	36.1		58.0	276	43.5	5.0	19	08.4	1.0	59.9	30	05 52	06 21	06 47	18 44	19 45	20 49	
	22 03	135	36.0	••	58.4	291	07.5	5.0	19	09.4	0.8	59.9	35	06 00	06 31	06 59	18 34	19 35	20 40	
	23 04	150	35.9		58.7	305	31.5	5.0	19	10.2	0.8	59.9	40	06 08	06 42	07 12	18 22	19 23	20 29	
	05 05	165	35.8		59.1	319	55.5	4.9	19	11.0	0.6	59.9	45	06 18	06 54	07 28	18 08	19 09	20 16	
	06 00	180	35.7	N21	59.4	334	19.4	5.0	S19	11.6	0.5	59.9	S 50	06 28	07 09	07 47	17 52	18 53	20 01	
	07 01	195	35.7	21	59.8	348	43.4	4.9	19	12.1	0.3	59.9	52	06 33	07 16	07 56	17 44	18 45	19 54	
	08 02	210	35.6	22	00.1	3	07.3	4.9	19	12.4	0.2	59.9	54	06 38	07 23	08 06	17 35	18 36	19 46	
	09 03	225	35.5	••	00.4	17	31.2	4.9	19	12.6	0.1	59.9	56	06 44	07 32	08 17	17 25	18 26	19 37	
	10 04	240	35.4		00.8	31	55.1	4.9	19	12.7	0.1	59.9	58	06 50	07 41	08 30	17 13	18 14	19 27	
SATURDAY	11 05	255	35.3		01.1	46	19.0	4.9	19	12.6	0.2	60.0	S 60	06 56	07 51	08 46	17 00	18 01	19 15	
	12 06	270	35.2	N22	01.5	60	42.9	4.9	S19	12.4	0.3	60.0								
	13 07	285	35.1		01.8	75	06.8	4.9	19	12.1	0.5	60.0								
	14 08	300	35.0		02.2	89	30.7	4.9	19	11.6	0.6	60.0								
	15 09	315	34.9	••	02.5	103	54.6	4.9	19	11.0	0.7	60.0								
	16 10	330	34.8		02.8	118	18.5	4.8	19	10.3	0.9	60.0								
	17 11	345	34.7		03.2	132	42.3	4.9	19	09.4	1.0	60.0								
	18 12		0 34.6	N22	03.5	147	06.2	4.9	S19	08.4	1.1	60.0	N 72	□	□	□	■	■	05 19	
	19 13	15	34.5		03.9	161	30.1	4.9	19	07.3	1.3	60.0	N 70	□	□	□	02 19	02 50	04 16	
	20 14	30	34.4		04.2	175	54.0	4.9	19	06.0	1.4	60.0	68	□	□	□	03 05	03 50	05 05	
SUNDAY	21 15	45	34.4	••	04.5	190	17.9	4.9	19	04.6	1.5	60.0	66	22 46	///	///	03 36	04 24	05 36	
	22 16	60	34.3		04.9	204	11.8	5.0	19	03.1	1.7	60.0	64	21 59	///	///	03 59	04 50	06 00	
	23 17	75	34.2		05.2	219	05.8	4.9	19	01.4	1.8	60.0	62	21 29	///	///	04 17	05 09	06 18	
	18 18	90	34.1	N22	05.5	233	29.7	4.9	S18	59.6	1.9	60.0	60	21 07	22 31	///	04 32	05 25	06 33	
	19 19	105	34.0		05.9	247	53.6	5.0	18	57.7	2.1	60.0	N 58	20 49	21 57	///	04 45	05 39	06 46	
	20 20	120	33.9		06.2	262	17.6	5.0	18	55.6	2.2	60.0	56	20 34	21 32	///	04 56	05 51	06 57	
	21 21	135	33.8	••	06.5	276	41.6	5.0	18	53.4	2.3	60.0	54	20 21	21 13	22 39	05 06	06 01	07 07	
	22 22	150	33.7		06.9	291	05.6	5.0	18	51.1	2.4	60.0	52	20 10	20 57	22 07	05 14	06 10	07 16	
	23 23	165	33.6		07.2	305	29.6	5.0	18	48.7	2.6	60.0	50	20 00	20 43	21 44	05 22	06 18	07 23	
	00 24												45	19 39	20 16	21 03	05 39	06 36	07 40	
MONDAY	01 00	180	33.5	N22	07.5	319	53.6	5.1	S18	46.1	2.8	60.0	N 40	19 23	19 55	20 35	05 53	06 50	07 54	
	02 01	195	33.4		07.9	334	17.7	5.1	18	43.3	2.8	60.0	35	19 08	19 38	20 14	06 04	07 02	08 05	
	03 02	210	33.3		08.2	348	41.8	5.1	18	40.5	3.0	60.0	30	18 56	19 23	19 56	06 14	07 13	08 15	
	04 03	225	33.2	••	08.5	3	05.9	5.1	18	37.5	3.1	60.0	20	18 36	19 00	19 29	06 32	07 31	08 32	
	05 04	240	33.1		08.9	17	30.0	5.2	18	34.4	3.2	60.0	N 10	18 18	18 41	19 07	06 47	07 47	08 47	
	06 05	255	33.0		09.2	31	54.2	5.1	18	31.2	3.4	60.0	0	18 01	18 24	18 50	07 01	08 01	09 01	
	07 06	270	32.9	N22	09.5	46	18.3	5.3	S18	27.8	3.5	60.0	S 10	17 45	18 08	18 34	07 16	08 16	09 15	
	08 07	285	32.8		09.8	60	42.6	5.2	18	24.3	3.6	60.0	20	17 28	17 51	18 19	07 31	08 32	09 30	
	09 08	300	32.7		10.2	75	06.8	5.3	18	20.7	3.8	60.0	30	17 08	17 34	18 03	07 49	08 50	09 47	
	10 09	315	32.6	••	10.5	89	31.1	5.3	18	16.9	3.8	60.0	35	16 56	17 24	17 55	07 59	09 00	09 57	
TUESDAY	11 10	330	32.5		10.8	103	55.4	5.3	18	13.1	4.0	60.0	40	16 43	17 13	17 47	08 10	09 12	10 08	
	12 11	345	32.4		11.1	118	19.7	5.4	18	09.1	4.1	60.0	45	16 28	17 01	17 37	08 24	09 26	10 21	
	13 12		0 32.3	N22	11.5	132	44.1	5.4	S18	05.0	4.3	60.0	S 50	16 09	16 46	17 27	08 41	09 43	10 37	
	14 13	15	32.2		11.8	147	08.5	5.5	18	00.7	4.4	60.0	52	15 59	16 39	17 22	08 48	09 51	10 44	
	15 14	30	32.1		12.1	161	33.0	5.5	17	56.3	4.4	60.0	54	15 49	16 32	17 17	08 57	10 00	10 52	
	16 15	45	32.0	••	12.4	175	57.5	5.5	17	51.9	4.6	60.0	56	15 38	16 23	17 12	09 07	10 10	11 02	
	17 16	60	32.0		12.8	190	22.0	5.6	17	47.3	4.8	60.0	58	15 25	16 14	17 06	09 18	10 21	11 12	
	18 17	75	31.9		13.1	204	46.6	5.6	17	42.5	4.8	60.0	S 60	15 09	16 04	16 59	09 31	10 34	11 24	
	19 18	90	31.8	N22	13.4	219	11.2	5.7	S17	37.7	5.0	60.0								
	20 19	105	31.7		13.7	233	35.9	5.7	17	32.7	5.1	60.0								
WEDNESDAY	21 20	120	31.6		14.0	248	00.6	5.7	17	27.6	5.2	60.0								
	22 21	135	31.5	••	14.3	262	25.3	5.8	17	22.4	5.3	60.0								
	23 22	150	31.4		14.7	276	50.1	5.8	17	17.1	5.4	60.0								
	24 23	165	31.3		15.0	291	14.9	5.9	17	11.7	5.6	60.0								
		S.D.	15.8	<i>d</i>	0.3	S.D.	16.3		16.3		16.4			Day	Egn. of Time		Mer. Pass.	Moon		
															00h	12h				

G.M.T.		ARIES		VENUS -4.1		MARS +1.6		JUPITER -2.1		SATURN +0.6		STARS														
		G.H.A.		G.H.A.	Dec.	G.H.A.	Dec.	G.H.A.	Dec.	G.H.A.	Dec.	Name	S.H.A.	Dec.												
d	h	°	'	°	'	°	'	°	'	°	'	°	'	°	'											
SATURDAY	00	251	12.5	224	42.2 N	8	41.7	113	13.8 N	17	42.3	301	38.5 S	18	57.1	309	38.8 S	20	21.8	Acamar	315	48.6	S	40	27.6	
	01	266	15.0	239	42.7		42.2	128	14.9		41.9	316	41.0		57.2	324	41.4		21.8	Achernar	335	56.5	S	57	25.8	
	02	281	17.4	254	43.3		42.8	143	16.0		41.5	331	43.5		57.2	339	43.9		21.9	Acrux	173	53.0	S	62	53.4	
	03	296	19.9	269	43.8		43.3	158	17.1		41.0	346	46.0		57.2	354	46.5		21.9	Adhara	255	43.8	S	28	55.3	
	04	311	22.4	284	44.3		43.8	173	18.1		40.6	1	48.6		57.2	9	49.1		21.9	Aldebaran	291	34.9	N	16	25.8	
	05	326	24.8	299	44.8		44.3	188	19.2		40.1	16	51.1		57.3	24	51.6		21.9							
	06	341	27.3	314	45.3 N	8	44.9	203	20.3	N	17	39.7	31	53.6 S	18	57.3	39	54.2 S	20	22.0	Alioth	166	55.0	N	56	10.4
	07	356	29.7	329	45.8		45.4	218	21.3		39.2	46	56.2		57.3	54	56.8		22.0	Alkaid	153	29.6	N	49	30.6	
	08	11	32.2	344	46.4		45.9	233	22.4		38.8	61	58.7		57.3	69	59.3		22.0	Al Na'ir	28	33.0	S	47	08.7	
	09	26	34.7	359	46.9		46.5	248	23.5		38.3	77	01.2		57.4	85	01.9		22.0	Alnilam	276	26.7	S	1	13.7	
	10	41	37.1	14	47.4		47.0	263	24.6		37.9	92	03.8		57.4	100	04.4		22.0	Alphard	218	34.9	S	8	29.5	
	11	56	39.6	29	47.9		47.5	278	25.6		37.5	107	06.3		57.4	115	07.0		22.1							
	12	71	42.1	44	48.4 N	8	48.1	293	26.7 N	17	37.0	122	08.8 S	18	57.4	130	09.6 S	20	22.1	Alphecca	126	44.0	N	26	50.8	
	13	86	44.5	59	48.9		48.6	308	27.8		36.6	137	11.4		57.5	145	12.1		22.1	Alpheratz	358	24.3	N	28	52.4	
	14	101	47.0	74	49.4		49.1	323	28.9		36.1	152	13.9		57.5	160	14.7		22.1	Altair	62	46.4	N	8	45.9	
	15	116	49.5	89	49.9		49.7	338	29.9		35.7	167	16.4		57.5	175	17.3		22.2	Ankaa	353	54.7	S	42	30.8	
	16	131	51.9	104	50.4		50.2	353	31.0		35.2	182	19.0		57.5	190	19.8		22.2	Antares	113	14.2	S	26	20.8	
17	146	54.4	119	50.9		50.8	8	32.1		34.8	197	21.5		57.6	205	22.4		22.2								
SUNDAY	18	161	56.9	134	51.4 N	8	51.3	23	33.1 N	17	34.3	212	24.0 S	18	57.6	220	24.9 S	20	22.2	Arcturus	146	31.4	N	19	23.1	
	19	176	59.3	149	51.9		51.8	38	34.2		33.9	227	26.6		57.6	235	27.5		22.3	Atria	108	50.8	S	68	57.5	
	20	192	01.8	164	52.4		52.4	53	35.3		33.4	242	29.1		57.6	250	30.1		22.3	Avior	234	34.5	S	59	23.4	
	21	207	04.2	179	52.9		52.9	68	36.4		33.0	257	31.6		57.7	265	32.6		22.3	Bellatrix	279	14.6	N	6	18.8	
	22	222	06.7	194	53.4		53.5	83	37.4		32.5	272	34.2		57.7	280	35.2		22.3	Betelgeuse	271	44.2	N	7	23.9	
	23	237	09.2	209	53.9		54.0	98	38.5		32.1	287	36.7		57.7	295	37.8		22.4							
	4 00	252	11.6	224	54.4 N	8	54.6	113	39.6 N	17	31.6	302	39.2 S	18	57.7	310	40.3 S	20	22.4	Canopus	264	14.1	S	52	40.7	
	01	267	14.1	239	54.9		55.1	128	40.6		31.2	317	41.8		57.8	325	42.9		22.4	Capella	281	33.1	N	45	57.5	
	02	282	16.6	254	55.4		55.6	143	41.7		30.8	332	44.3		57.8	340	45.5		22.4	Deneb	49	58.0	N	45	08.3	
	03	297	19.0	269	55.9		56.2	158	42.8		30.3	347	46.8		57.8	355	48.0		22.4	Denebola	183	13.7	N	14	47.4	
	04	312	21.5	284	56.4		56.7	173	43.9		29.9	2	49.4		57.9	10	50.6		22.5	Diphda	349	35.5	S	18	11.9	
	05	327	24.0	299	56.9		57.3	188	44.9		29.4	17	51.9		57.9	25	53.2		22.5							
	06	342	26.4	314	57.3 N	8	57.8	203	46.0 N	17	29.0	32	54.5 S	18	57.9	40	55.7 S	20	22.5	Dubhe	194	40.0	N	61	57.9	
	07	357	28.9	329	57.8		58.4	218	47.1		28.5	47	57.0		57.9	55	58.3		22.5	Elnath	279	02.8	N	28	34.4	
	08	12	31.4	344	58.3		58.9	233	48.2		28.1	62	59.5		58.0	71	00.8		22.6	Eltanin	91	03.9	N	51	29.6	
	09	27	33.8	359	58.8		59.5	248	49.2		27.6	78	02.1		58.0	86	03.4		22.6	Enif	34	25.6	N	9	41.8	
	10	42	36.3	14	59.3		9 00.0	263	50.3		27.2	93	04.6		58.0	101	06.0		22.6	Fomalhaut	16	07.4	S	29	49.5	
11	57	38.7	29	59.8		00.6	278	51.4		26.7	108	07.1		58.0	116	08.5		22.6								
12	72	41.2	45	00.2 N	9	01.1	293	52.4 N	17	26.3	123	09.7 S	18	58.1	131	11.1 S	20	22.7	Gacrux	172	44.5	S	56	54.0		
13	87	43.7	60	00.7		01.7	308	53.5		25.8	138	12.2		58.1	146	13.7		22.7	Gienah	176	32.7	S	17	19.7		
14	102	46.1	75	01.2		02.2	323	54.6		25.4	153	14.8		58.1	161	16.2		22.7	Hadar	149	43.3	S	60	11.4		
15	117	48.6	90	01.7		02.8	338	55.7		24.9	168	17.3		58.2	176	18.8		22.7	Hamal	328	45.5	N	23	16.6		
16	132	51.1	105	02.1		03.3	353	56.7		24.5	183	19.8		58.2	191	21.4		22.8	Kaus Aust.	84	35.6	S	34	24.1		
17	147	53.5	120	02.6		03.9	8	57.8		24.0	198	22.4		58.2	206	23.9		22.8								
18	162	56.0	135	03.1 N	9	04.4	23	58.9 N	17	23.6	213	24.9 S	18	58.2	221	26.5 S	20	22.8	Kochab	137	17.4	N	74	19.1		
19	177	58.5	150	03.6		05.0	38	59.9		23.1	228	27.5		58.3	236	29.1		22.8	Markab	14	17.5	N	14	59.7		
20	193	00.9	165	04.0		05.5	54	01.0		22.7	243	30.0		58.3	251	31.7		22.9	Menkar	314	56.5	N	3	56.2		
21	208	03.4	180	04.5		06.1	69	02.1		22.2	258	32.6		58.3	266	34.2		22.9	Menkent	148	53.7	S	36	10.9		
22	223	05.9	195	05.0		06.6	84	03.2		21.8	273	35.1		58.4	281	36.8		22.9	Miaplacidus	221	48.4	S	69	33.8		
23	238	08.3	210	05.4		07.2	99	04.2		21.3	288	37.6		58.4	296	39.4		22.9								
MONDAY	5 00	253	10.8	225	05.9 N	9	07.8	114	05.3 N	17	20.9	303	40.2 S	18	58.4	311	41.9 S	20	23.0	Mirfak	309	37.2	N	49	43.2	
	01	268	13.2	240	06.4		08.3	129	06.4		20.4	318	42.7		58.4	326	44.5		23.0	Nunki	76	46.8	S	26	20.6	
	02	283	15.7	255	06.8		08.9	144	07.4		20.0	333	45.3		58.5	341	47.1		23.0	Peacock	54	20.8	S	56	51.4	
	03	298	18.2	270	07.3		09.4	159	08.5		19.5	348	47.8		58.5	356	49.6		23.0	Pollux	244	16.1	N	28	07.2	
	04	313	20.6	285	07.7		10.0	174	09.6		19.0	3	50.4		58.5	11	52.2		23.1	Procyon	245	41.2	N	5	19.4	
	05	328	23.1	300	08.2		10.6	189	10.7		18.6	18	52.9		58.6	26	54.8		23.1							
	06	343	25.6	315	08.7 N	9	11.1	204	11.7 N	17	18.1	33	55.5 S	18	58.6	41	57.3 S	20	23.1	Rasalhague	96	42.6	N	12	35.3	
	07	358	28.0	330	09.1		11.7	219	12.8		17.7	48	58.0		58.6	56	59.9		23.1	Regulus	208	25.5	N	12	09.4	
	08	13	30.5	345	09.6		12.2	234	13.9		17.2	64	00.5		58.6	72	02.5		23.2	Rigel	281	50.2	S	8	14.9	
	09	28	33.0	0	10.0		12.8	249	14.9		16.8	79	03.1		58.7	87	05.0		23.2	Rigel Kent.	140	44.9	S	60	40.6	
	10	43	35.4	15	10.5		13.4	264	16.0		16.3	94	05.6		58.7	102	07.6		23.2	Sabik	102	57.4	S	15	40.6	
	11	58	37.9	30	10.9		13.9	279	17.1		15.9	109	08.2		58.7	117	10.2		23.2							
	12	73	40.4	45	11.4 N	9	14.5	294	18.2 N	17	15.4	124	10.7 S	18	58.8	132	12.8 S	20	23.3	Schedar	350	25.6	N	56	19.2	
	13	88	42.8	60	11.8		15.1	309	19.2		15.0	139	13.3		58.8	147	15.3		23.3	Shaula	97	15.0	S	37	04.5	
	14	103	45.3	75	12.3		15.6	324	20.3		14.5	154	15.8		58.8	162	17.9		23.3	Sirius	259	08.8	S	16	39.9	
	15	118	47.7	90	12.7		16.2	339</																		

Mer. Pass. 7 10^m

v 0.5 d 0.6

v 1.1 d 0.4

v 2.5 d 0.0

v 2.6 d 0.0

G.M.T.		SUN				MOON				Lat.	Twilight		Sun-rise	Moonrise						
		G.H.A.		Dec.		G.H.A.		Dec.			Naut.	Civil		3	4	5	6			
d	h	°	'	°	'	°	'	°	'	°	'	h	m	h	m	h	m	h	m	
SATURDAY	3 00	180	31.2	N22	15.3	305	39.8	6.0	S17	06.1	5.6	60.0	N 72	□	□	□	02 25	02 02	01 50	01 41
	01	195	31.1	15.6	320	04.8	6.0	17	00.5	5.8	60.0	N 70	□	□	□	01 32	01 34	01 33	01 32	
	02	210	31.0	15.9	334	29.8	6.0	16	54.7	5.9	59.9	68	□	□	□	00 59	01 12	01 20	01 24	
	03	225	30.9	16.2	348	54.8	6.1	16	48.8	6.0	59.9	66	///	///	01 00	00 35	00 55	01 09	01 18	
	04	240	30.8	16.5	3 19.9	6.1	16	42.8	6.1	59.9	64	///	///	01 51	00 16	00 41	00 59	01 13		
	05	255	30.7	16.9	17 45.0	6.2	16	36.7	6.2	59.9	62	///	///	02 22	00 01	00 29	00 51	01 08		
	06	270	30.6	N22	17.2	32 10.2	6.3	S16	30.5	6.3	59.9	60	///	01 18	02 45	24 19	00 19	00 44	01 04	
	07	285	30.5	17.5	46 35.5	6.3	16	24.2	6.5	59.9	N 58	///	01 55	03 04	24 11	00 11	00 38	01 00		
	08	300	30.4	17.8	61 00.8	6.3	16	17.7	6.5	59.9	56	///	02 21	03 19	24 03	00 03	00 32	00 55		
	09	315	30.3	18.1	75 26.1	6.4	16	11.2	6.6	59.9	54	01 11	02 41	03 32	23 56	24 27	00 27	00 55		
	10	330	30.2	18.4	89 51.5	6.5	16	04.6	6.8	59.9	52	01 45	02 57	03 44	23 50	24 23	00 23	00 52		
	11	345	30.1	18.7	104 17.0	6.5	15	57.8	6.8	59.9	50	02 09	03 11	03 54	23 44	24 19	00 19	00 50		
	12	0	30.0	N22	19.0	118 42.5	6.6	S15	51.0	7.0	59.9	45	02 51	03 39	04 15	23 32	24 10	00 10	00 44	
	13	15	29.9	19.3	133 08.1	6.6	15	44.0	7.0	59.9	N 40	03 19	04 00	04 32	23 22	24 03	00 03	00 40		
	14	30	29.7	19.6	147 33.7	6.7	15	37.0	7.1	59.8	35	03 41	04 17	04 46	23 13	23 57	24 36	00 36		
	15	45	29.6	19.9	161 59.4	6.7	15	29.9	7.3	59.8	30	03 59	04 32	04 59	23 06	23 51	24 33	00 33		
	16	60	29.5	20.2	176 25.1	6.8	15	22.6	7.3	59.8	20	04 26	04 55	05 20	22 52	23 41	24 27	00 27		
	17	75	29.4	20.5	190 50.9	6.9	15	15.3	7.5	59.8	N 10	04 48	05 15	05 38	22 41	23 33	24 22	00 22		
	18	90	29.3	N22	20.9	205 16.8	6.9	S15	07.8	7.5	59.8	0	05 06	05 32	05 55	22 30	23 25	24 17	00 17	
	19	105	29.2	21.2	219 42.7	7.0	15	00.3	7.6	59.8	S 10	05 22	05 49	06 11	22 19	23 16	24 12	00 12		
	20	120	29.1	21.5	234 08.7	7.1	14	52.7	7.7	59.8	20	05 38	06 05	06 29	22 07	23 08	24 07	00 07		
	21	135	29.0	21.8	248 34.8	7.1	14	45.0	7.8	59.8	30	05 53	06 23	06 49	21 54	22 58	24 01	00 01		
	22	150	28.9	22.1	263 00.9	7.1	14	37.2	7.9	59.7	35	06 01	06 33	07 01	21 46	22 52	23 58	25 02		
	23	165	28.8	22.4	277 27.0	7.3	14	29.3	8.0	59.7	40	06 10	06 44	07 14	21 37	22 46	23 54	25 01		
24	180	28.7	N22	22.7	291 53.3	7.2	S14	21.3	8.1	59.7	45	06 20	06 57	07 30	21 27	22 38	23 49	24 59		
SUNDAY	00	180	28.7	N22	22.7	291 53.3	7.2	S14	21.3	8.1	59.7	S 50	06 31	07 12	07 50	21 14	22 29	23 44	24 58	
	01	195	28.6	23.0	306 19.5	7.4	14	13.2	8.1	59.7	52	06 36	07 19	07 59	21 08	22 25	23 42	24 57		
	02	210	28.5	23.3	320 45.9	7.4	14	05.1	8.3	59.7	54	06 41	07 26	08 09	21 02	22 20	23 39	24 56		
	03	225	28.4	23.5	335 12.3	7.5	13	56.8	8.3	59.7	56	06 47	07 35	08 21	20 55	22 15	23 36	24 56		
	04	240	28.3	23.8	349 38.8	7.5	13	48.5	8.4	59.7	58	06 53	07 44	08 35	20 47	22 09	23 33	24 55		
	05	255	28.2	24.1	4 05.3	7.6	13	40.1	8.5	59.7	S 60	07 00	07 55	08 51	20 37	22 03	23 29	24 54		
	06	270	28.1	N22	24.4	18 31.9	7.6	S13	31.6	8.6	59.6									
	07	285	28.0	24.7	32 58.5	7.7	13	23.0	8.6	59.6										
	08	300	27.9	25.0	47 25.2	7.8	13	14.4	8.8	59.6	Lat.	Sun-set	Twilight							
	09	315	27.8	25.3	61 52.0	7.8	13	05.6	8.8	59.6			Civil	Naut.	3	4	5	6		
	10	330	27.7	25.6	76 18.8	7.9	12	56.8	8.8	59.6	°	h	m	h	m	h	m	h	m	
	11	345	27.6	25.9	90 45.7	8.0	12	48.0	9.0	59.6	N 72	□	□	□	05 19	07 40	09 45	11 42		
	12	0	27.5	N22	26.2	105 12.7	8.0	S12	39.0	9.0	59.6	N 70	□	□	□	06 11	08 07	10 00	11 49	
	13	15	27.4	26.5	119 39.7	8.1	12	30.0	9.1	59.5	68	□	□	□	06 43	08 27	10 12	11 54		
	14	30	27.2	26.8	134 06.8	8.1	12	20.9	9.2	59.5	66	23 01	///	///	07 06	08 44	10 22	11 59		
	15	45	27.1	27.1	148 33.9	8.2	12	11.7	9.2	59.5	64	22 07	///	///	07 25	08 57	10 30	12 03		
	16	60	27.0	27.3	163 01.1	8.3	12	02.5	9.3	59.5	62	21 35	///	///	07 40	09 08	10 37	12 06		
	17	75	26.9	27.6	177 28.4	8.3	11	53.2	9.4	59.5	60	21 12	22 41	///	07 52	09 17	10 43	12 09		
	18	90	26.8	N22	27.9	191 55.7	8.4	S11	43.8	9.5	59.5	N 58	20 53	22 03	///	08 03	09 25	10 49	12 11	
	19	105	26.7	28.2	206 23.1	8.4	11	34.3	9.5	59.4	56	20 38	21 37	///	08 12	09 32	10 53	12 14		
	20	120	26.6	28.5	220 50.5	8.6	11	24.8	9.5	59.4	54	20 25	21 17	22 47	08 21	09 39	10 58	12 16		
	21	135	26.5	28.8	235 18.1	8.5	11	15.3	9.7	59.4	52	20 13	21 00	22 13	08 28	09 44	11 01	12 18		
	22	150	26.4	29.1	249 45.6	8.6	11	05.6	9.7	59.4	50	20 03	20 46	21 48	08 35	09 50	11 05	12 19		
	23	165	26.3	29.3	264 13.2	8.7	10	55.9	9.7	59.4	45	19 42	20 18	21 07	08 49	10 01	11 12	12 23		
MONDAY	5 00	180	26.2	N22	29.6	278 40.9	8.7	S10	46.2	9.8	59.4	N 40	19 25	19 57	20 38	09 01	10 10	11 18	12 26	
	01	195	26.1	29.9	293 08.6	8.8	10	36.4	9.9	59.3	35	19 10	19 40	20 16	09 11	10 18	11 24	12 28		
	02	210	26.0	30.2	307 36.4	8.9	10	26.5	9.9	59.3	30	18 58	19 25	19 58	09 19	10 24	11 28	12 31		
	03	225	25.8	30.5	322 04.3	8.9	10	16.6	10.0	59.3	20	18 37	19 01	19 30	09 35	10 36	11 36	12 35		
	04	240	25.7	30.7	336 32.2	9.0	10	06.6	10.0	59.3	N 10	18 19	18 42	19 08	09 48	10 47	11 43	12 38		
	05	255	25.6	31.0	351 00.2	9.0	9	56.6	10.1	59.3	0	18 02	18 24	18 50	10 00	10 56	11 50	12 41		
	06	270	25.5	N22	31.3	5 28.2	9.1	S	9	46.5	10.2	59.3	S 10	17 45	18 08	18 34	10 12	11 06	11 56	12 44
	07	285	25.4	31.6	19 56.3	9.1	9	36.3	10.2	59.2	20	17 28	17 51	18 19	10 25	11 16	12 03	12 48		
	08	300	25.3	31.9	34 24.4	9.2	9	26.1	10.2	59.2	30	17 07	17 33	18 03	10 40	11 27	12 11	12 51		
	09	315	25.2	32.1	48 52.6	9.3	9	15.9	10.3	59.2	35	16 56	17 24	17 55	10 48	11 34	12 15	12 54		
	10	330	25.1	32.4	63 20.9	9.3	9	05.6	10.3	59.2	40	16 42	17 12	17 46	10 57	11 41	12 20	12 56		
	11	345	25.0	32.7	77 49.2	9.3	8	55.3	10.4	59.2	45	16 26	17 00	17 36	11 09	11 50	12 26	12 59		
	12	0	24.9	N22	33.0	92 17.5	9.4	S	8	44.9	10.4	59.2	S 50	16 07	16 45	17 25	11 22	12 00	12 33	13 02
	13	15	24.8	33.2	106 45.9	9.5	8	34.5	10.5	59.1	52	15 57	16 37	17 21	11 28	12 05	12 36	13 03		
	14	30	24.7	33.5	121 14.4	9.5	8	24.0	10.5	59.1	54	15 47	16 30	17 15	11 35	12 10	12 39	13 05		
	15	45	24.5	33.8	135 42.9	9.6	8	13.5	10.5	59.1	56	15 35	16 21	17 10	11 43	12 16	12 43	13 07		
	16	60	24.4	34.1	150 11.5	9.6	8	03.0	10.6	59.1	58	15 21	16 12	17 03	11 52	12 22	12 47	13 09		
	17	75	24.3	34.3	164 40.1	9.6	7	52.4	10.6	59.1	S 60	15 05	16 01	16 57	12 01	12 30	12 52	13 11		
	18	90	24.2	N22	34.6	179 08.7	9.8	S	7	41.8	10.7	59.0								
	19	105	24.1	34.9	193 37.5	9.7	7	31.1	10.7	59.0										
	20	120	24.0	35.1	208 06.2	9.9	7	20.4	10.7	59.0	Day	SUN	Mer. Pass.	MOON						
	21	135	23.9	35.4	222 35.1	9.8	7	09.7	10.8	59.0	Eqn. of Time	12h	Mer. Pass.	Mer. Upper	Pass. Lower	Age	Phase			
	22	150	23.8	35.7	237 03.9	9.9	6	58.9	10.8	59.0	m s	m s	h m	h m	h m	d				
	23	165	23.7	35.9	251 32.8	10.0	6	48.1	10.8	58.9	02 05	02 00	11 58	03 46	16 15	20				
										01 55	01 50	11 58	04 43	17 10	21					
										01 45	01 40	11 58	05 37	18 04	22					
		S.D. 15.8																		

G.M.T.		ARIES		VENUS -4.1		MARS +1.7		JUPITER -2.2		SATURN +0.6		STARS					
		G.H.A.		G.H.A.	Dec.	G.H.A.	Dec.	G.H.A.	Dec.	G.H.A.	Dec.	Name	S.H.A.	Dec.			
TUESDAY	d	h															
	°	'	°	'	°	'	°	'	°	'		°	'	°	'		
	6	00	254 09.9	225 16.7 N	9 21.3	114 31.0 N	17 09.9	304 41.3 S	18 59.1	312 43.6 S	20 23.6	Acamar	315 48.6	S 40 27.5			
	01	269 12.4	240 17.2	21.9	129 32.1	09.5	319 43.9	59.2	327 46.2	23.6	Achernar	335 56.5	S 57 25.8				
	02	284 14.8	255 17.6	22.4	144 33.1	09.0	334 46.4	59.2	342 48.8	23.6	Acrux	173 53.0	S 62 53.4				
	03	299 17.3	270 18.0	23.0	159 34.2	08.6	349 49.0	59.2	357 51.3	23.6	Adhara	255 43.8	S 28 55.3				
	04	314 19.8	285 18.5	23.6	174 35.3	08.1	4 51.6	59.2	12 53.9	23.7	Aldebaran	291 34.9	N 16 25.8				
	05	329 22.2	300 18.9	24.2	189 36.4	07.7	19 54.1	59.3	27 56.5	23.7							
	06	344 24.7	315 19.3 N	9 24.7	204 37.4 N	17 07.2	34 56.7 S	18 59.3	42 59.0 S	20 23.7	Alioth	166 55.0	N 56 10.5				
	07	359 27.2	330 19.8	25.3	219 38.5	06.7	49 59.2	59.3	58 01.6	23.7	Alkaid	153 29.6	N 49 30.6				
	08	14 29.6	345 20.2	25.9	234 39.6	06.3	65 01.8	59.4	73 04.2	23.8	Al Na'ir	28 33.0	S 47 08.7				
	09	29 32.1	0 20.6	26.5	249 40.6	05.8	80 04.3	59.4	88 06.8	23.8	Alnilam	276 26.7	S 1 13.7				
	10	44 34.6	15 21.0	27.0	264 41.7	05.4	95 06.9	59.4	103 09.3	23.8	Alphard	218 34.9	S 8 29.5				
	11	59 37.0	30 21.5	27.6	279 42.8	04.9	110 09.4	59.5	118 11.9	23.8							
	12	74 39.5	45 21.9 N	9 28.2	294 43.8 N	17 04.5	125 12.0 S	18 59.5	133 14.5 S	20 23.9	Alphecca	126 44.0	N 26 50.8				
	13	89 42.0	60 22.3	28.8	309 44.9	04.0	140 14.5	59.5	148 17.1	23.9	Alpheratz	358 24.3	N 28 52.4				
	14	104 44.4	75 22.7	29.3	324 46.0	03.5	155 17.1	59.6	163 19.6	23.9	Altair	62 46.4	N 8 45.9				
	15	119 46.9	90 23.2	29.9	339 47.1	03.1	170 19.7	59.6	178 22.2	23.9	Ankaa	353 54.7	S 42 30.8				
	16	134 49.3	105 23.6	30.5	354 48.1	02.6	185 22.2	59.6	193 24.8	24.0	Antares	113 14.2	S 26 20.8				
	17	149 51.8	120 24.0	31.1	9 49.2	02.2	200 24.8	59.7	208 27.4	24.0							
	18	164 54.3	135 24.4 N	9 31.7	24 50.3 N	17 01.7	215 27.3 S	18 59.7	223 29.9 S	20 24.0	Arcturus	146 31.4	N 19 23.1				
	19	179 56.7	150 24.8	32.2	39 51.3	01.2	230 29.9	59.7	238 32.5	24.1	Atria	108 50.8	S 68 57.5				
	20	194 59.2	165 25.2	32.8	54 52.4	00.8	245 32.4	59.8	253 35.1	24.1	Avior	234 34.5	S 59 23.4				
	21	210 01.7	180 25.7	33.4	69 53.5	17 00.3	260 35.0	59.8	268 37.7	24.1	Bellatrix	279 14.6	N 6 18.8				
22	225 04.1	195 26.1	34.0	84 54.5	16 59.9	275 37.6	59.8	283 40.2	24.1	Betelgeuse	271 44.2	N 7 23.9					
23	240 06.6	210 26.5	34.6	99 55.6	59.4	290 40.1	59.8	298 42.8	24.2								
WEDNESDAY	7	00	255 09.1	225 26.9 N	9 35.1	114 56.7 N	16 58.9	305 42.7 S	18 59.9	313 45.4 S	20 24.2	Canopus	264 14.1	S 52 40.7			
	01	270 11.5	240 27.3	35.7	129 57.8	58.5	320 45.2	59.9	328 48.0	24.2	Capella	281 33.1	N 45 57.5				
	02	285 14.0	255 27.7	36.3	144 58.8	58.0	335 47.8	18 59.9	343 50.5	24.2	Deneb	49 58.0	N 45 08.4				
	03	300 16.4	270 28.1	36.9	159 59.9	57.6	350 50.4	19 00.0	358 53.1	24.3	Denebola	183 13.7	N 14 47.4				
	04	315 18.9	285 28.5	37.5	175 01.0	57.1	5 52.9	00.0	13 55.7	24.3	Diphda	349 35.5	S 18 11.9				
	05	330 21.4	300 28.9	38.1	190 02.0	56.6	20 55.5	00.0	28 58.3	24.3							
	06	345 23.8	315 29.3 N	9 38.7	205 03.1 N	16 56.2	35 58.1 S	19 00.1	44 00.8 S	20 24.3	Dubhe	194 40.0	N 61 57.9				
	07	0 26.3	330 29.7	39.2	220 04.2	55.7	51 00.6	00.1	59 03.4	24.4	Elnath	279 02.8	N 28 34.4				
	08	15 28.8	345 30.1	39.8	235 05.3	55.3	66 03.2	00.1	74 06.0	24.4	Eltanin	91 03.9	N 51 29.6				
	09	30 31.2	0 30.6	40.4	250 06.3	54.8	81 05.7	00.2	89 08.6	24.4	Enif	34 25.6	N 9 41.8				
	10	45 33.7	15 31.0	41.0	265 07.4	54.3	96 08.3	00.2	104 11.1	24.4	Fomalhaut	16 07.4	S 29 49.5				
	11	60 36.2	30 31.3	41.6	280 08.5	53.9	111 10.9	00.2	119 13.7	24.5							
	12	75 38.6	45 31.7 N	9 42.2	295 09.5 N	16 53.4	126 13.4 S	19 00.3	134 16.3 S	20 24.5	Gacrux	172 44.5	S 56 54.1				
	13	90 41.1	60 32.1	42.8	310 10.6	52.9	141 16.0	00.3	149 18.9	24.5	Gienah	176 32.7	S 17 19.7				
	14	105 43.6	75 32.5	43.3	325 11.7	52.5	156 18.6	00.3	164 21.5	24.5	Hadar	149 43.3	S 60 11.4				
	15	120 46.0	90 32.9	43.9	340 12.7	52.0	171 21.1	00.4	179 24.0	24.6	Hamal	328 45.4	N 23 16.6				
	16	135 48.5	105 33.3	44.5	355 13.8	51.6	186 23.7	00.4	194 26.6	24.6	Kaus Aust.	84 35.6	S 34 24.1				
	17	150 50.9	120 33.7	45.1	10 14.9	51.1	201 26.3	00.4	209 29.2	24.6							
	18	165 53.4	135 34.1 N	9 45.7	25 16.0 N	16 50.6	216 28.8 S	19 00.5	224 31.8 S	20 24.7	Kochab	137 17.4	N 74 19.1				
	19	180 55.9	150 34.5	46.3	40 17.0	50.2	231 31.4	00.5	239 34.3	24.7	Markab	14 17.5	N 14 59.7				
	20	195 58.3	165 34.9	46.9	55 18.1	49.7	246 34.0	00.5	254 36.9	24.7	Menkar	314 56.5	N 3 56.2				
	21	211 00.8	180 35.3	47.5	70 19.2	49.2	261 36.5	00.6	269 39.5	24.7	Menkent	148 53.7	S 36 10.9				
	22	226 03.3	195 35.7	48.1	85 20.2	48.8	276 39.1	00.6	284 42.1	24.8	Miaplacidus	221 48.4	S 69 33.8				
	23	241 05.7	210 36.1	48.7	100 21.3	48.3	291 41.7	00.7	299 44.7	24.8							
THURSDAY	8	00	256 08.2	225 36.4 N	9 49.3	115 22.4 N	16 47.8	306 44.2 S	19 00.7	314 47.2 S	20 24.8	Mirfak	309 37.2	N 49 43.2			
	01	271 10.7	240 36.8	49.9	130 23.4	47.4	321 46.8	00.7	329 49.8	24.8	Nunki	76 46.7	S 26 20.6				
	02	286 13.1	255 37.2	50.4	145 24.5	46.9	336 49.4	00.8	344 52.4	24.9	Peacock	54 20.8	S 56 51.4				
	03	301 15.6	270 37.6	51.0	160 25.6	46.4	351 51.9	00.8	359 55.0	24.9	Pollux	244 16.1	N 28 07.2				
	04	316 18.1	285 38.0	51.6	175 26.7	46.0	6 54.5	00.8	14 57.6	24.9	Procyon	245 41.2	N 5 19.4				
	05	331 20.5	300 38.3	52.2	190 27.7	45.5	21 57.1	00.9	30 00.1	25.0							
	06	346 23.0	315 38.7 N	9 52.8	205 28.8 N	16 45.0	36 59.6 S	19 00.9	45 02.7 S	20 25.0	Rasalhague	96 42.6	N 12 35.3				
	07	1 25.4	330 39.1	53.4	220 29.9	44.6	52 02.2	00.9	60 05.3	25.0	Regulus	208 25.5	N 12 09.4				
	08	16 27.9	345 39.5	54.0	235 30.9	44.1	67 04.8	01.0	75 07.9	25.0	Rigel	281 50.2	S 8 14.9				
	09	31 30.4	0 39.9	54.6	250 32.0	43.6	82 07.4	01.0	90 10.5	25.1	Rigel Kent.	140 44.9	S 60 40.6				
	10	46 32.8	15 40.2	55.2	265 33.1	43.2	97 09.9	01.0	105 13.0	25.1	Sabik	102 57.4	S 15 40.6				
	11	61 35.3	30 40.6	55.8	280 34.1	42.7	112 12.5	01.1	120 15.6	25.1							
	12	76 37.8	45 41.0 N	9 56.4	295 35.2 N	16 42.2	127 15.1 S	19 01.1	135 18.2 S	20 25.1	Schedar	350 25.6	N 56 19.2				
	13	91 40.2	60 41.3	57.0	310 36.3	41.8	142 17.6	01.1	150 20.8	25.2	Shaula	97 15.0	S 37 04.5				
	14	106 42.7	75 41.7	57.6	325 37.4	41.3	157 20.2	01.2	165 23.4	25.2	Sirius	259 08.8	S 16 39.9				
	15	121 45.2	90 42.1	58.2	340 38.4	40.8	172 22.8	01.2	180 25.9	25.2	Spica	159 12.6	S 10 57.6				
	16	136 47.6	105 42.5	58.8	355 39.5	40.4	187 25.4	01.2	195 28.5	25.2	Suhail	223 21.6	S 43 16.8				
	17	151 50.1	120 42.8	59.4	10 40.6	39.9	202 27.9	01.3	210 31.1	25.3							
	18	166 52.5	135 43.2 N	10 00.0	25 41.6 N	16 39.4	217 30.5 S	19 01.3	225 33.7 S	20 25.3	Vega	81 05.2	N 38 44.8				
	19	181 55.0	150 43.6	00.6	40 42.7	39.0	232 33.1	01.4	240 36.3	25.3	Zuben'ubi	137 48.7	S 15 52.9				
	20	196 57.5	165 43.9	01.2	55 43.8	38.5	247 35.6	01.4	255 38.8	25.4							
	21	211 59.9	180 44.3	01.8	70 44.8	38.0	262 38.2	01.4	270 41.4	25.4		S.H.A.	Mer. Pass.				
	22	227 02.4	195 44.6	02.4	85 45.9	37.6	277 40.8	01.5	285 44.0	25.4	Venus	330 17.8	8 58				
	23	242 04.9	210 45.0	03.0	100 47.0	37.1	292 43.4	01.5	300 46.6	25.4	Mars	219 47.6	16 19				
		h	m									Jupiter	50 33.6	3 37			
Mer. Pass.		6 58.3	v	0.4	d	0.6	v	1.1	d	0.5	v	2.6	d	0.0	Saturn	58 36.3	3 04

G.M.T.		SUN		MOON				Lat.	Twilight		Sun-rise	Moonrise							
		G.H.A.	Dec.	G.H.A.	<i>v</i>	Dec.	<i>d</i>		H.P.	Naut.		Civil	6	7	8	9			
d	h	°	'	°	'	°	'	°	'	°	'	h	m	h	m	h	m	h	m
TUESDAY	00	180 23-5	N22 36-2	266 01-8	10-0	S	6 37-3	10-9	58-9	N 72	□	□	□	01 41	01 33	01 25	01 17		
	01	195 23-4	36-5	280 30-8	10-1		6 26-4	10-8	58-9	N 70	□	□	□	01 32	01 30	01 28	01 27		
	02	210 23-3	36-7	294 59-9	10-1		6 15-6	11-0	58-9	68	□	□	□	01 24	01 28	01 31	01 34		
	03	225 23-2	.. 37-0	309 29-0	10-1		6 04-6	10-9	58-9	66	////	////	00 46	01 18	01 26	01 33	01 41		
	04	240 23-1	37-3	323 58-1	10-2		5 53-7	11-0	58-8	64	////	////	01 45	01 13	01 24	01 35	01 47		
	05	255 23-0	37-5	338 27-3	10-2		5 42-7	11-0	58-8	62	////	////	02 18	01 08	01 23	01 37	01 51		
	06	270 22-9	N22 37-8	352 56-5	10-3	S	5 31-7	11-0	58-8	60	////	01 10	02 42	01 04	01 22	01 38	01 56		
	07	285 22-8	38-0	7 25-8	10-3		5 20-7	11-0	58-8	N 58	////	01 50	03 01	01 01	01 21	01 40	01 59		
	08	300 22-7	38-3	21 55-1	10-4		5 09-7	11-1	58-8	56	////	02 17	03 17	00 57	01 20	01 41	02 03		
	09	315 22-5	.. 38-6	36 24-5	10-4		4 58-6	11-1	58-7	54	01 04	02 38	03 30	00 55	01 19	01 42	02 06		
	10	330 22-4	38-8	50 53-9	10-4		4 47-5	11-1	58-7	52	01 41	02 54	03 42	00 52	01 18	01 43	02 08		
	11	345 22-3	39-1	65 23-3	10-5		4 36-4	11-1	58-7	50	02 06	03 09	03 52	00 50	01 17	01 44	02 11		
	12	0 22-2	N22 39-3	79 52-8	10-5	S	4 25-3	11-1	58-7	45	02 49	03 37	04 14	00 44	01 16	01 46	02 16		
	13	15 22-1	39-6	94 22-3	10-6		4 14-2	11-2	58-7	N 40	03 18	03 59	04 31	00 40	01 14	01 48	02 21		
	14	30 22-0	39-9	108 51-9	10-6		4 03-0	11-1	58-6	35	03 40	04 16	04 46	00 36	01 13	01 49	02 25		
	15	45 21-9	.. 40-1	123 21-5	10-6		3 51-9	11-2	58-6	30	03 58	04 31	04 58	00 33	01 12	01 50	02 29		
	16	60 21-8	40-4	137 51-1	10-7		3 40-7	11-2	58-6	20	04 26	04 55	05 20	00 27	01 11	01 53	02 35		
	17	75 21-6	40-6	152 20-8	10-7		3 29-5	11-2	58-6	N 10	04 48	05 15	05 38	00 22	01 09	01 55	02 40		
	18	90 21-5	N22 40-9	166 50-5	10-7	S	3 18-3	11-2	58-6	0	05 07	05 33	05 55	00 17	01 08	01 57	02 45		
	19	105 21-4	41-1	181 20-2	10-8		3 07-1	11-2	58-5	S 10	05 23	05 49	06 12	00 12	01 06	01 59	02 51		
	20	120 21-3	41-4	195 50-0	10-8		2 55-9	11-2	58-5	20	05 39	06 06	06 30	00 07	01 05	02 01	02 56		
	21	135 21-2	.. 41-6	210 19-8	10-8		2 44-7	11-3	58-5	30	05 55	06 24	06 50	00 01	01 03	02 03	03 03		
	22	150 21-1	41-9	224 49-6	10-9		2 33-4	11-2	58-5	35	06 03	06 34	07 02	25 02	01 02	02 05	03 06		
	23	165 21-0	42-1	239 19-5	10-9		2 22-2	11-3	58-5	40	06 12	06 46	07 16	25 01	01 01	02 06	03 10		
24									45	06 22	06 59	07 32	24 59	00 59	02 08	03 15			
WEDNESDAY	00	180 20-8	N22 42-4	253 49-4	10-9	S	2 10-9	11-2	58-4	S 50	06 33	07 14	07 52	24 58	00 58	02 10	03 21		
	01	195 20-7	42-6	268 19-3	11-0		1 59-7	11-3	58-4	52	06 38	07 21	08 02	24 57	00 57	02 11	03 24		
	02	210 20-6	42-9	282 49-3	11-0		1 48-4	11-2	58-4	54	06 43	07 29	08 12	24 56	00 56	02 12	03 27		
	03	225 20-5	.. 43-1	297 19-3	11-0		1 37-2	11-3	58-4	56	06 49	07 38	08 24	24 56	00 56	02 14	03 30		
	04	240 20-4	43-4	311 49-3	11-0		1 25-9	11-2	58-3	58	06 55	07 47	08 38	24 55	00 55	02 15	03 34		
	05	255 20-3	43-6	326 19-3	11-1		1 14-7	11-3	58-3	S 60	07 03	07 59	08 55	24 54	00 54	02 17	03 38		
	06	270 20-1	N22 43-9	340 49-4	11-1	S	1 03-4	11-3	58-3	Lat. Sun-set Twilight Civil Naut. Moonset 6 7 8 9									
	07	285 20-0	44-1	355 19-5	11-1		0 52-1	11-2	58-3	N 72	□	□	□	11 42	13 34	15 24	17 15		
	08	300 19-9	44-4	9 49-6	11-2		0 40-9	11-3	58-3	N 70	□	□	□	11 49	13 34	15 17	17 00		
	09	315 19-8	.. 44-6	24 19-8	11-1		0 29-6	11-2	58-2	68	□	□	□	11 54	13 34	15 11	16 48		
	10	330 19-7	44-8	38 49-9	11-2		0 18-4	11-2	58-2	66	23 16	////	////	11 59	13 33	15 06	16 38		
	11	345 19-6	45-1	53 20-1	11-2	S	0 07-2	11-3	58-2	64	22 14	////	////	12 03	13 33	15 02	16 29		
	12	0 19-5	N22 45-3	67 50-3	11-3	N	0 04-1	11-2	58-2	62	21 41	////	////	12 06	13 33	14 59	16 22		
	13	15 19-3	45-6	82 20-6	11-2		0 15-3	11-2	58-2	60	21 16	22 50	////	12 09	13 33	14 56	16 16		
	14	30 19-2	45-8	96 50-8	11-3		0 26-5	11-2	58-1	N 58	20 57	22 09	////	12 11	13 33	14 53	16 11		
	15	45 19-1	.. 46-1	111 21-1	11-3		0 37-7	11-2	58-1	56	20 41	21 42	////	12 14	13 33	14 50	16 06		
	16	60 19-0	46-3	125 51-4	11-3		0 48-9	11-2	58-1	54	20 28	21 21	22 56	12 16	13 33	14 48	16 02		
	17	75 18-9	46-5	140 21-7	11-4		1 00-1	11-2	58-1	52	20 16	21 04	22 18	12 18	13 33	14 46	15 58		
	18	90 18-7	N22 46-8	154 52-1	11-3	N	1 11-3	11-1	58-0	50	20 06	20 49	21 52	12 19	13 32	14 44	15 55		
	19	105 18-6	47-0	169 22-4	11-4		1 22-4	11-1	58-0	45	19 44	20 21	21 09	12 23	13 32	14 40	15 47		
	20	120 18-5	47-2	183 52-8	11-4		1 33-5	11-2	58-0	S 10	17 46	18 08	18 34	12 44	13 31	14 16	15 02		
	21	135 18-4	.. 47-5	198 23-2	11-4		1 44-7	11-1	58-0	20	17 28	17 51	18 19	12 48	13 31	14 13	14 55		
	22	150 18-3	47-7	212 53-6	11-4		1 55-8	11-1	58-0	30	17 07	17 33	18 03	12 51	13 30	14 08	14 47		
	23	165 18-2	47-9	227 24-0	11-5		2 06-9	11-0	57-9	35	16 55	17 23	17 55	12 54	13 30	14 06	14 42		
THURSDAY	00	180 18-0	N22 48-2	241 54-5	11-4	N	2 17-9	11-1	57-9	40	16 41	17 12	17 45	12 56	13 30	14 03	14 37		
	01	195 17-9	48-4	256 24-9	11-5		2 29-0	11-0	57-9	35	16 25	16 59	17 36	12 59	13 29	14 00	14 31		
	02	210 17-8	48-6	270 55-4	11-4		2 40-0	11-0	57-9	30	18 59	19 27	20 00	12 31	13 32	14 32	15 31		
	03	225 17-7	.. 48-9	285 25-8	11-5		2 51-0	11-0	57-9	20	18 38	19 02	19 31	12 35	13 32	14 27	15 23		
	04	240 17-6	49-1	299 56-3	11-5		3 02-0	11-0	57-8	N 10	18 19	18 42	19 09	12 38	13 31	14 24	15 15		
	05	255 17-4	49-3	314 26-8	11-5		3 13-0	10-9	57-8	0	18 02	18 25	18 51	12 41	13 31	14 20	15 09		
	06	270 17-3	N22 49-6	328 57-3	11-5	N	3 23-9	11-0	57-8	S 10	17 46	18 08	18 34	12 44	13 31	14 16	15 02		
	07	285 17-2	49-8	343 27-8	11-6		3 34-9	10-8	57-8	20	17 28	17 51	18 19	12 48	13 31	14 13	14 55		
	08	300 17-1	50-0	357 58-4	11-5		3 45-7	10-9	57-7	30	17 07	17 33	18 03	12 51	13 30	14 08	14 47		
	09	315 17-0	.. 50-2	12 28-9	11-5		3 56-6	10-8	57-7	35	16 55	17 23	17 55	12 54	13 30	14 06	14 42		
	10	330 16-9	50-5	26 59-4	11-6		4 07-4	10-9	57-7	40	16 41	17 12	17 45	12 56	13 30	14 03	14 37		
	11	345 16-7	50-7	41 30-0	11-5		4 18-3	10-7	57-7	45	16 25	16 59	17 36	12 59	13 29	14 00	14 31		
	12	0 16-6	N22 50-9	56 00-5	11-6	N	4 29-0	10-8	57-7	S 50	16 05	16 43	17 24	13 02	13 29	13 56	14 23		
	13	15 16-5	51-1	70 31-1	11-6		4 39-8	10-7	57-6	52	15 56	16 36	17 19	13 03	13 29	13 54	14 20		
	14	30 16-4	51-4	85 01-7	11-5		4 50-5	10-7	57-6	54	15 45	16 28	17 14	13 05	13 29	13 52	14 16		
	15	45 16-3	.. 51-6	99 32-2	11-6		5 01-2	10-6	57-6	56	15 33	16 20	17 08	13 07	13 28	13 50	14 12		
	16	60 16-1	51-8	114 02-8	11-6		5 11-8	10-7	57-6	58	15 19	16 10	17 02	13 09</					

G.M.T.	ARIES			VENUS -4.0			MARS +1.7			JUPITER -2.2			SATURN +0.6			STARS		
	G.H.A.	G.H.A.	Dec.	G.H.A.	G.H.A.	Dec.	G.H.A.	G.H.A.	Dec.	G.H.A.	G.H.A.	Dec.	G.H.A.	G.H.A.	Dec.	Name	S.H.A.	Dec.
d h																		
9 00	257 07.3	225 45.4	N10 03.6	115 48.0	N16 36.6		307 45.9	S19 01.5		315 49.2	S20 25.5		Acamar	315 48.6	S 40 27.5			
01	272 09.8	240 45.7	04.3	130 49.1	36.2		322 48.5	01.6		330 51.7	25.5		Achernar	335 56.4	S 57 25.8			
02	287 12.3	255 46.1	04.9	145 50.2	35.7		337 51.1	01.6		345 54.3	25.5		Acru	173 53.0	S 62 53.4			
03	302 14.7	270 46.4	05.5	160 51.3	35.2		352 53.7	01.6		0 56.9	25.5		Adhara	255 43.8	S 28 55.3			
04	317 17.2	285 46.8	06.1	175 52.3	34.8		7 56.3	01.7		15 59.5	25.6		Aldebaran	291 34.9	N 16 25.8			
05	332 19.7	300 47.2	06.7	190 53.4	34.3		22 58.8	01.7		31 02.1	25.6							
06	347 22.1	315 47.5	N10 07.3	205 54.5	N16 33.8		38 01.4	S19 01.7		46 04.7	S20 25.6		Alioth	166 55.0	N 56 10.5			
07	2 24.6	330 47.9	07.9	220 55.5	33.3		53 04.0	01.8		61 07.2	25.7		Alkaid	153 29.6	N 49 30.6			
08	17 27.0	345 48.2	08.5	235 56.6	32.9		68 06.6	01.8		76 09.8	25.7		Al Na'ir	28 33.0	S 47 08.7			
09	32 29.5	0 48.6	09.1	250 57.7	32.4		83 09.1	01.9		91 12.4	25.7		Alnilam	276 26.6	S 1 13.7			
10	47 32.0	15 48.9	09.7	265 58.7	31.9		98 11.7	01.9		106 15.0	25.7		Alphard	218 34.9	S 8 29.5			
11	62 34.4	30 49.3	10.3	280 59.8	31.5		113 14.3	01.9		121 17.6	25.8							
12	77 36.9	45 49.6	N10 10.9	296 00.9	N16 31.0		128 16.9	S19 02.0		136 20.2	S20 25.8		Alphecca	126 44.0	N 26 50.8			
13	92 39.4	60 50.0	11.5	311 01.9	30.5		143 19.5	02.0		151 22.8	25.8		Alpheratz	358 24.3	N 28 52.4			
14	107 41.8	75 50.3	12.1	326 03.0	30.0		158 22.0	02.0		166 25.3	25.8		Altair	62 46.3	N 8 46.0			
15	122 44.3	90 50.6	12.8	341 04.1	29.6		173 24.6	02.1		181 27.9	25.9		Ankaa	353 54.7	S 42 30.8			
16	137 46.8	105 51.0	13.4	356 05.2	29.1		188 27.2	02.1		196 30.5	25.9		Antares	113 14.2	S 26 20.8			
17	152 49.2	120 51.3	14.0	11 06.2	28.6		203 29.8	02.2		211 33.1	25.9							
18	167 51.7	135 51.7	N10 14.6	26 07.3	N16 28.2		218 32.4	S19 02.2		226 35.7	S20 26.0		Arcturus	146 31.4	N 19 23.1			
19	182 54.1	150 52.0	15.2	41 08.4	27.7		233 34.9	02.2		241 38.3	26.0		Atria	108 50.8	S 68 57.5			
20	197 56.6	165 52.3	15.8	56 09.4	27.2		248 37.5	02.3		256 40.8	26.0		Avior	234 34.5	S 59 23.4			
21	212 59.1	180 52.7	16.4	71 10.5	26.7		263 40.1	02.3		271 43.4	26.0		Bellatrix	279 14.6	N 6 18.8			
22	228 01.5	195 53.0	17.0	86 11.6	26.3		278 42.7	02.3		286 46.0	26.1		Betelgeuse	271 44.2	N 7 23.9			
23	243 04.0	210 53.4	17.7	101 12.6	25.8		293 45.3	02.4		301 48.6	26.1							
10 00	258 06.5	225 53.7	N10 18.3	116 13.7	N16 25.3		308 47.9	S19 02.4		316 51.2	S20 26.1		Canopus	264 14.1	S 52 40.6			
01	273 08.9	240 54.0	18.9	131 14.8	24.8		323 50.4	02.5		331 53.8	26.1		Capella	281 33.1	N 45 57.5			
02	288 11.4	255 54.4	19.5	146 15.8	24.4		338 53.0	02.5		346 56.4	26.2		Deneb	49 58.0	N 45 08.4			
03	303 13.9	270 54.7	20.1	161 16.9	23.9		353 55.6	02.5		1 58.9	26.2		Denebola	183 13.7	N 14 47.4			
04	318 16.3	285 55.0	20.7	176 18.0	23.4		8 58.2	02.6		17 01.5	26.2		Diphda	349 35.5	S 18 11.9			
05	333 18.8	300 55.4	21.3	191 19.0	22.9		24 00.8	02.6		32 04.1	26.3							
06	348 21.3	315 55.7	N10 22.0	206 20.1	N16 22.5		39 03.4	S19 02.7		47 06.7	S20 26.3		Dubhe	194 40.0	N 61 57.9			
07	3 23.7	330 56.0	22.6	221 21.2	22.0		54 06.0	02.7		62 09.3	26.3		El Nath	279 02.8	N 28 34.4			
08	18 26.2	345 56.3	23.2	236 22.3	21.5		69 08.5	02.7		77 11.9	26.3		Eltanin	91 03.9	N 51 29.6			
09	33 28.6	0 56.7	23.8	251 23.3	21.0		84 11.1	02.8		92 14.5	26.4		Enif	34 25.6	N 9 41.8			
10	48 31.1	15 57.0	24.4	266 24.4	20.6		99 13.7	02.8		107 17.1	26.4		Fomalhaut	16 07.3	S 29 49.5			
11	63 33.6	30 57.3	25.0	281 25.5	20.1		114 16.3	02.9		122 19.6	26.4							
12	78 36.0	45 57.6	N10 25.7	296 26.5	N16 19.6		129 18.9	S19 02.9		137 22.2	S20 26.5		Gacrux	172 44.5	S 56 54.1			
13	93 38.5	60 58.0	26.3	311 27.6	19.1		144 21.5	02.9		152 24.8	26.5		Gienah	176 32.7	S 17 19.7			
14	108 41.0	75 58.3	26.9	326 28.7	18.7		159 24.1	03.0		167 27.4	26.5		Hadar	149 43.3	S 60 11.4			
15	123 43.4	90 58.6	27.5	341 29.7	18.2		174 26.7	03.0		182 30.0	26.5		Hamal	328 45.4	N 23 16.6			
16	138 45.9	105 58.9	28.1	356 30.8	17.7		189 29.2	03.1		197 32.6	26.6		Kaus Aust.	84 35.6	S 34 24.1			
17	153 48.4	120 59.2	28.8	11 31.9	17.2		204 31.8	03.1		212 35.2	26.6							
18	168 50.8	135 59.6	N10 29.4	26 32.9	N16 16.8		219 34.4	S19 03.1		227 37.8	S20 26.6		Kochab	137 17.4	N 74 19.1			
19	183 53.3	150 59.9	30.0	41 34.0	16.3		234 37.0	03.2		242 40.3	26.7		Markab	14 17.5	N 14 59.7			
20	198 55.8	166 00.2	30.6	56 35.1	15.8		249 39.6	03.2		257 42.9	26.7		Menkar	314 56.5	N 3 56.2			
21	213 58.2	181 00.5	31.2	71 36.1	15.3		264 42.2	03.3		272 45.5	26.7		Menkent	148 53.7	S 36 10.9			
22	229 00.7	196 00.8	31.9	86 37.2	14.9		279 44.8	03.3		287 48.1	26.7		Miaplacidus	221 48.5	S 69 33.8			
23	244 03.1	211 01.1	32.5	101 38.3	14.4		294 47.4	03.3		302 50.7	26.8							
11 00	259 05.6	226 01.4	N10 33.1	116 39.3	N16 13.9		309 50.0	S19 03.4		317 53.3	S20 26.8		Mirfak	309 37.2	N 49 43.2			
01	274 08.1	241 01.7	33.7	131 40.4	13.4		324 52.6	03.4		332 55.9	26.8		Nunki	76 46.7	S 26 20.6			
02	289 10.5	256 02.1	34.3	146 41.5	12.9		339 55.1	03.5		347 58.5	26.9		Peacock	54 20.8	S 56 51.4			
03	304 13.0	271 02.4	35.0	161 42.5	12.5		354 57.7	03.5		3 01.1	26.9		Pollux	244 16.1	N 28 07.2			
04	319 15.5	286 02.7	35.6	176 43.6	12.0		10 00.3	03.5		18 03.6	26.9		Procyon	245 41.2	N 5 19.4			
05	334 17.9	301 03.0	36.2	191 44.7	11.5		25 02.9	03.6		33 06.2	26.9							
06	349 20.4	316 03.3	N10 36.8	206 45.8	N16 11.0		40 05.5	S19 03.6		48 08.8	S20 27.0		Rasalhague	96 42.6	N 12 35.3			
07	4 22.9	331 03.6	37.5	221 46.8	10.6		55 08.1	03.7		63 11.4	27.0		Regulus	208 25.5	N 12 09.4			
08	19 25.3	346 03.9	38.1	236 47.9	10.1		70 10.7	03.7		78 14.0	27.0		Rigel	281 50.2	S 8 14.9			
09	34 27.8	1 04.2	38.7	251 49.0	09.6		85 13.3	03.7		93 16.6	27.1		Rigel Kent.	140 45.0	S 60 40.7			
10	49 30.3	16 04.5	39.3	266 50.0	09.1		100 15.9	03.8		108 19.2	27.1		Sabik	102 57.3	S 15 40.6			
11	64 32.7	31 04.8	40.0	281 51.1	08.6		115 18.5	03.8		123 21.8	27.1							
12	79 35.2	46 05.1	N10 40.6	296 52.2	N16 08.2		130 21.1	S19 03.9		138 24.4	S20 27.1		Schedar	350 25.6	N 56 19.2			
13	94 37.6	61 05.4	41.2	311 53.2	07.7		145 23.7	03.9		153 27.0	27.2		Shaula	97 14.9	S 37 04.5			
14	109 40.1	76 05.7	41.9	326 54.3	07.2		160 26.3	03.9		168 29.5	27.2		Sirius	259 08.8	S 16 39.9			
15	124 42.6	91 06.0	42.5	341 55.4	06.7		175 28.9	04.0		183 32.1	27.2		Spica	159 12.6	S 10 57.6			
16	139 45.0	106 06.3	43.1	356 56.4	06.2		190 31.5	04.0		198 34.7	27.3		Suhail	223 21.6	S 43 16.8			
17	154 47.5	121 06.6	43.7	11 57.5	05.8		205 34.1	04.1		213 37.3	27.3							
18	169 50.0	136 06.9	N10 44.4	26 58.6	N16 05.3		220 36.7	S19 04.1		228 39.9	S20 27.3		Vega	81 05.2	N 38 44.8			
19	184 52.4	151 07.2	45.0	41 59.6	04.8		235 39.3	04.1		243 42.5	27.3		Zuben'ubi	137 48.7	S 15 52.9			
20	199 54.9	166 07.4	45.6	57 00.7	04.3		250 41.9	04.2		258 45.1	27.4							
21	214 57.4	181 07.7	46.2	72 01.8	03.8		265 44.5	04.2		273 47.7	27.4							
22	229 59.8	196 08.0	46.9	87 02.8	03.3		280 47.1											

		ARIES		VENUS -4.0		MARS +1.7		JUPITER -2.2		SATURN +0.5		STARS			
G.M.T.		G.H.A.	G.H.A.	Dec.	G.H.A.	Dec.	G.H.A.	Dec.	G.H.A.	Dec.	G.H.A.	Dec.	Name	S.H.A.	Dec.
d	h														
MONDAY	12 00	260 04.8	226 08.6	N10 48.1	117 05.0	N16 02.4	310 52.3	S19 04.4	318 55.5	S20 27.5			Acamar	315 48.6	S 40 27.5
	01	275 07.2	241 08.9	48.8	132 06.0	01.9	325 54.8	04.4	333 58.0	27.5			Achernar	335 56.4	S 57 25.8
	02	290 09.7	256 09.2	49.4	147 07.1	01.4	340 57.4	04.4	349 00.6	27.5			Acruz	173 53.0	S 62 53.4
	03	305 12.1	271 09.5	.. 50.0	162 08.2	.. 00.9	356 00.0	.. 04.5	4 03.2	.. 27.6			Adhara	255 43.8	S 28 55.3
	04	320 14.6	286 09.7	50.7	177 09.2	00.5	11 02.6	04.5	19 05.8	27.6			Aldebaran	291 34.9	N 16 25.8
	05	335 17.1	301 10.0	51.3	192 10.3	16 00.0	26 05.2	04.6	34 08.4	27.6					
	06	350 19.5	316 10.3	N10 51.9	207 11.4	N15 59.5	41 07.9	S19 04.6	49 11.0	S20 27.7			Alioth	166 55.0	N 56 10.5
	07	5 22.0	331 10.6	52.6	222 12.5	59.0	56 10.5	04.6	64 13.6	27.7			Alkaid	153 29.6	N 49 30.6
	08	20 24.5	346 10.9	53.2	237 13.5	58.5	71 13.1	04.7	79 16.2	27.7			Al Na'ir	28 33.0	S 47 08.7
	09	35 26.9	1 11.1	.. 53.8	252 14.6	.. 58.0	86 15.7	.. 04.7	94 18.8	.. 27.8			Alnilam	276 26.6	S 1 13.7
	10	50 29.4	16 11.4	54.5	267 15.7	57.6	101 18.3	04.8	109 21.4	27.8			Alphard	218 34.9	S 8 29.5
	11	65 31.9	31 11.7	55.1	282 16.7	57.1	116 20.9	04.8	124 24.0	27.8					
	12	80 34.3	46 12.0	N10 55.7	297 17.8	N15 56.6	131 23.5	S19 04.9	139 26.6	S20 27.8			Alphecca	126 44.0	N 26 50.8
	13	95 36.8	61 12.3	56.4	312 18.9	56.1	146 26.1	04.9	154 29.2	27.9			Alpheratz	358 24.3	N 28 52.4
	14	110 39.2	76 12.5	57.0	327 19.9	55.6	161 28.7	04.9	169 31.8	27.9			Altair	62 46.3	N 8 46.0
	15	125 41.7	91 12.8	.. 57.6	342 21.0	.. 55.1	176 31.3	.. 05.0	184 34.4	.. 27.9			Ankaa	353 54.6	S 42 30.8
	16	140 44.2	106 13.1	58.3	357 22.1	54.6	191 33.9	05.0	199 37.0	28.0			Antares	113 14.2	S 26 20.8
	17	155 46.6	121 13.3	58.9	12 23.1	54.2	206 36.5	05.1	214 39.5	28.0					
	18	170 49.1	136 13.6	N10 59.5	27 24.2	N15 53.7	221 39.1	S19 05.1	229 42.1	S20 28.0			Arcturus	146 31.4	N 19 23.1
	19	185 51.6	151 13.9	11 00.2	42 25.3	53.2	236 41.7	05.2	244 44.7	28.1			Atria	108 50.8	S 68 57.5
	20	200 54.0	166 14.2	00.8	57 26.3	52.7	251 44.3	05.2	259 47.3	28.1			Avior	234 34.5	S 59 23.4
	21	215 56.5	181 14.4	.. 01.4	72 27.4	.. 52.2	266 46.9	.. 05.3	274 49.9	.. 28.1			Bellatrix	279 14.6	N 6 18.8
	22	230 59.0	196 14.7	02.1	87 28.5	51.7	281 49.5	05.3	289 52.5	28.1			Betelgeuse	271 44.2	N 7 23.9
23	246 01.4	211 15.0	02.7	102 29.5	51.3	296 52.1	05.3	304 55.1	28.2						
TUESDAY	13 00	261 03.9	226 15.2	N11 03.4	117 30.6	N15 50.8	311 54.7	S19 05.4	319 57.7	S20 28.2			Canopus	264 14.2	S 52 40.6
	01	276 06.4	241 15.5	04.0	132 31.7	50.3	326 57.3	05.4	335 00.3	28.2			Capella	281 33.1	N 45 57.5
	02	291 08.8	256 15.8	04.6	147 32.7	49.8	341 59.9	05.5	350 02.9	28.3			Deneb	49 57.9	N 45 08.4
	03	306 11.3	271 16.0	.. 05.3	162 33.8	.. 49.3	357 02.5	.. 05.5	5 05.5	.. 28.3			Denebola	183 13.7	N 14 47.4
	04	321 13.7	286 16.3	05.9	177 34.9	48.8	12 05.1	05.6	20 08.1	28.3			Diphda	349 35.5	S 18 11.9
	05	336 16.2	301 16.5	06.5	192 35.9	48.3	27 07.7	05.6	35 10.7	28.4					
	06	351 18.7	316 16.8	N11 07.2	207 37.0	N15 47.8	42 10.4	S19 05.7	50 13.3	S20 28.4			Dubhe	194 40.1	N 61 57.9
	07	6 21.1	331 17.1	07.8	222 38.1	47.4	57 13.0	05.7	65 15.9	28.4			Elmath	279 02.7	N 28 34.4
	08	21 23.6	346 17.3	08.5	237 39.1	46.9	72 15.6	05.7	80 18.5	28.4			Eltanin	91 03.9	N 51 29.7
	09	36 26.1	1 17.6	.. 09.1	252 40.2	.. 46.4	87 18.2	.. 05.8	95 21.1	.. 28.5			Enif	34 25.6	N 9 41.8
	10	51 28.5	16 17.8	09.7	267 41.3	45.9	102 20.8	05.8	110 23.7	28.5			Fomalhaut	16 07.3	S 29 49.5
	11	66 31.0	31 18.1	10.4	282 42.3	45.4	117 23.4	05.9	125 26.3	28.5					
	12	81 33.5	46 18.3	N11 11.0	297 43.4	N15 44.9	132 26.0	S19 05.9	140 28.9	S20 28.6			Gacrux	172 44.5	S 56 54.1
	13	96 35.9	61 18.6	11.7	312 44.5	44.4	147 28.6	06.0	155 31.5	28.6			Gienah	176 32.7	S 17 19.7
	14	111 38.4	76 18.8	12.3	327 45.6	43.9	162 31.2	06.0	170 34.1	28.6			Hadar	149 43.3	S 60 11.4
	15	126 40.9	91 19.1	.. 12.9	342 46.6	.. 43.5	177 33.9	.. 06.1	185 36.7	.. 28.7			Hamal	328 45.4	N 23 16.6
	16	141 43.3	106 19.3	13.6	357 47.7	43.0	192 36.5	06.1	200 39.3	28.7			Kaus Aust.	84 35.6	S 34 24.1
	17	156 45.8	121 19.6	14.2	12 48.8	42.5	207 39.1	06.1	215 41.8	28.7					
	18	171 48.2	136 19.8	N11 14.9	27 49.8	N15 42.0	222 41.7	S19 06.2	230 44.4	S20 28.7			Kochab	137 17.5	N 74 19.1
	19	186 50.7	151 20.1	15.5	42 50.9	41.5	237 44.3	06.2	245 47.0	28.8			Markab	14 17.5	N 14 59.7
	20	201 53.2	166 20.3	16.2	57 52.0	41.0	252 46.9	06.3	260 49.6	28.8			Menkar	314 56.5	N 3 56.2
	21	216 55.6	181 20.6	.. 16.8	72 53.0	.. 40.5	267 49.5	.. 06.3	275 52.2	.. 28.8			Menkent	148 53.7	S 36 10.9
	22	231 58.1	196 20.8	17.4	87 54.1	40.0	282 52.1	06.4	290 54.8	28.9			Miaplacidus	221 48.5	S 69 33.8
23	247 00.6	211 21.1	18.1	102 55.2	39.5	297 54.8	06.4	305 57.4	28.9						
WEDNESDAY	14 00	262 03.0	226 21.3	N11 18.7	117 56.2	N15 39.1	312 57.4	S19 06.5	321 00.0	S20 28.9			Mirfak	309 37.1	N 49 43.2
	01	277 05.5	241 21.5	19.4	132 57.3	38.6	328 00.0	06.5	336 02.6	28.9			Nunki	76 46.7	S 26 20.6
	02	292 08.0	256 21.8	20.0	147 58.4	38.1	343 02.6	06.5	351 05.2	29.0			Peacock	54 20.8	S 56 51.4
	03	307 10.4	271 22.0	.. 20.7	162 59.4	.. 37.6	358 05.2	.. 06.6	6 07.8	.. 29.0			Pollux	244 16.1	N 28 07.2
	04	322 12.9	286 22.3	21.3	178 00.5	37.1	13 07.8	06.6	21 10.4	29.0			Procyon	245 41.2	N 5 19.4
	05	337 15.4	301 22.5	21.9	193 01.6	36.6	28 10.4	06.7	36 13.0	29.1					
	06	352 17.8	316 22.7	N11 22.6	208 02.6	N15 36.1	43 13.1	S19 06.7	51 15.6	S20 29.1			Rasalhague	96 42.6	N 12 35.3
	07	7 20.3	331 23.0	23.2	223 03.7	35.6	58 15.7	06.8	66 18.2	29.1			Regulus	208 25.5	N 12 09.4
	08	22 22.7	346 23.2	23.9	238 04.8	35.1	73 18.3	06.8	81 20.8	29.2			Rigel	281 50.2	S 8 14.8
	09	37 25.2	1 23.4	.. 24.5	253 05.8	.. 34.6	88 20.9	.. 06.9	96 23.4	.. 29.2			Rigel Kent.	140 45.0	S 60 40.7
	10	52 27.7	16 23.7	25.2	268 06.9	34.1	103 23.5	06.9	111 26.0	29.2			Sabik	102 57.3	S 15 40.6
	11	67 30.1	31 23.9	25.8	283 08.0	33.7	118 26.1	07.0	126 28.6	29.3					
	12	82 32.6	46 24.1	N11 26.5	298 09.0	N15 33.2	133 28.8	S19 07.0	141 31.2	S20 29.3			Schedar	350 25.5	N 56 19.2
	13	97 35.1	61 24.4	27.1	313 10.1	32.7	148 31.4	07.1	156 33.8	29.3			Shaula	97 14.9	S 37 04.5
	14	112 37.5	76 24.6	27.8	328 11.2	32.2	163 34.0	07.1	171 36.4	29.3			Sirius	259 08.8	S 16 39.9
	15	127 40.0	91 24.8	.. 28.4	343 12.2	.. 31.7	178 36.6	.. 07.1	186 39.0	.. 29.4			Spica	159 12.6	S 10 57.6
	16	142 42.5	106 25.0	29.1	358 13.3	31.2	193 39.2	07.2	201 41.6	29.4			Suhail	223 21.6	S 43 16.8
	17	157 44.9	121 25.3	29.7	13 14.4	30.7	208 41.9	07.2	216 44.2	29.4					
	18	172 47.4	136 25.5	N11 30.3	28 15.4	N15 30.2	223 44.5	S19 07.3	231 46.8	S20 29.5			Vega	81 05.2	N 38 44.9
	19	187 49.9	151 25.7	31.0	43 16.5	29.7	238 47.1	07.3	246 49.4	29.5			Zuben'ubi	137 48.7	S 15 52.9
	20	202 52.3	166 25.9	31.6	58 17.6	29.2	253 49.7	07.4	261 52.0	29.5					
	21	217 54.8	181 26.2	.. 32.3	73 18.6	.. 28.7	268 52.3	.. 07.4	276 54.6	.. 29.6				S.H.A.	Mer. Pass.
	22	232 57.2	196 26.4	32.9	88 19.7	28.2	283 55.0	07.5	291 57.2	29.6			Venus	325 11.3	h 8 55
23	247 59.7	211 26.6	33.6	103 20.8	27.7	298 57.6	07.5	306 59.8	29.6			Mars	216 26.7	h 16 09	

G.M.T.	SUN				MOON				Lat.	Twilight		Sun-rise	Moonrise			
	G.H.A.		Dec.	H.P.	G.H.A.	v	Dec.	H.P.		Naut.	Civil		12	13	14	15
	d	h														
MONDAY	12 00	180 06.2	N23 07.3	194 28.4	10.9	N16 28.6	5.5	55.9	N 72	□	□	□	00 43	□	□	□
	01	195 06.1	07.5	208 58.3	10.9	16 34.1	5.5	55.9	N 70	□	□	□	01 27	01 34	01 55	02 48
	02	210 05.9	07.6	223 28.2	10.8	16 39.6	5.3	55.9	68	□	□	□	01 57	02 15	02 48	03 41
	03	225 05.8	07.8	237 58.0	10.9	16 44.9	5.2	55.8	66	□	□	□	02 19	02 44	03 21	04 13
	04	240 05.7	08.0	252 27.9	10.8	16 50.1	5.2	55.8	64	///	///	01 35	02 36	03 05	03 45	04 37
	05	255 05.5	08.1	266 57.7	10.9	16 55.3	5.1	55.8	62	///	///	02 12	02 51	03 23	04 04	04 56
	06	270 05.4	N23 08.3	281 27.6	10.8	N17 00.4	5.0	55.8	60	///	00 57	02 37	03 04	03 37	04 20	05 11
	07	285 05.3	08.4	295 57.4	10.8	17 05.4	4.9	55.8	N 58	///	01 43	02 57	03 14	03 50	04 33	05 24
	08	300 05.2	08.6	310 27.2	10.8	17 10.3	4.8	55.7	56	///	02 12	03 14	03 23	04 01	04 44	05 35
	09	315 05.0	08.8	324 57.0	10.9	17 15.1	4.7	55.7	54	00 52	02 34	03 28	03 32	04 10	04 55	05 45
	10	330 04.9	08.9	339 26.9	10.8	17 19.8	4.6	55.7	52	01 35	02 51	03 40	03 39	04 18	05 03	05 54
	11	345 04.8	09.1	353 56.7	10.8	17 24.4	4.5	55.7	50	02 01	03 06	03 50	03 46	04 26	05 11	06 02
	12	0 04.6	N23 09.2	8 26.5	10.8	N17 28.9	4.5	55.7	45	02 46	03 35	04 13	04 00	04 42	05 28	06 19
	13	15 04.5	09.4	22 56.3	10.8	17 33.4	4.3	55.6	N 40	03 16	03 58	04 30	04 12	04 56	05 43	06 33
	14	30 04.4	09.5	37 26.1	10.7	17 37.7	4.3	55.6	35	03 39	04 16	04 45	04 22	05 07	05 54	06 44
	15	45 04.3	09.7	51 55.8	10.8	17 42.0	4.1	55.6	30	03 58	04 31	04 58	04 31	05 17	06 05	06 55
	16	60 04.1	09.9	66 25.6	10.8	17 46.1	4.1	55.6	20	04 26	04 55	05 20	04 47	05 34	06 22	07 12
	17	75 04.0	10.0	80 55.4	10.8	17 50.2	4.0	55.6	N 10	04 49	05 16	05 39	05 00	05 49	06 38	07 28
	18	90 03.9	N23 10.2	95 25.2	10.8	N17 54.2	3.8	55.5	0	05 08	05 34	05 56	05 13	06 03	06 53	07 42
	19	105 03.7	10.3	109 55.0	10.7	17 58.0	3.8	55.5	S 10	05 24	05 51	06 13	05 26	06 17	07 08	07 56
	20	120 03.6	10.5	124 24.7	10.8	18 01.8	3.7	55.5	20	05 40	06 08	06 32	05 40	06 32	07 23	08 12
	21	135 03.5	10.6	138 54.5	10.8	18 05.5	3.6	55.5	30	05 57	06 27	06 53	05 55	06 50	07 41	08 30
	22	150 03.3	10.8	153 24.3	10.7	18 09.1	3.5	55.5	35	06 05	06 37	07 05	06 04	07 00	07 51	08 39
	23	165 03.2	10.9	167 54.0	10.8	18 12.6	3.5	55.5	40	06 15	06 49	07 19	06 15	07 11	08 03	08 51
13 00	180 03.1	N23 11.1	182 23.8	10.8	N18 16.1	3.3	55.4	45	06 25	07 02	07 36	06 27	07 25	08 18	09 05	
01	195 03.0	11.2	196 53.6	10.8	18 19.4	3.2	55.4	S 50	06 36	07 18	07 56	06 42	07 41	08 35	09 22	
02	210 02.8	11.4	211 23.4	10.7	18 22.6	3.1	55.4	52	06 42	07 25	08 06	06 49	07 49	08 43	09 29	
03	225 02.7	11.5	225 53.1	10.8	18 25.7	3.1	55.4	54	06 47	07 33	08 17	06 57	07 58	08 52	09 38	
04	240 02.6	11.7	240 22.9	10.8	18 28.8	2.9	55.4	56	06 53	07 42	08 30	07 06	08 08	09 02	09 48	
05	255 02.4	11.8	254 52.7	10.8	18 31.7	2.9	55.3	58	07 00	07 52	08 44	07 16	08 19	09 14	10 00	
06	270 02.3	N23 11.9	269 22.5	10.8	N18 34.6	2.7	55.3	S 60	07 07	08 04	09 01	07 27	08 32	09 27	10 12	
07	285 02.2	12.1	283 52.3	10.7	18 37.3	2.7	55.3									
08	300 02.0	12.2	298 22.0	10.8	18 40.0	2.5	55.3	Lat.	Sun-set	Twilight		Moonset				
09	315 01.9	12.4	312 51.8	10.8	18 42.5	2.5	55.3			Civil	Naut.	12	13	14	15	
10	330 01.8	12.5	327 21.6	10.8	18 45.0	2.4	55.3									
11	345 01.7	12.7	341 51.4	10.9	18 47.4	2.2	55.2									
12	0 01.5	N23 12.8	356 21.3	10.8	N18 49.6	2.2	55.2									
13	15 01.4	12.9	10 51.1	10.8	18 51.8	2.1	55.2	N 72	□	□	□	□	□	□	□	
14	30 01.3	13.1	25 20.9	10.8	18 53.9	2.0	55.2	N 70	□	□	□	22 00	23 24	24 13	00 13	
15	45 01.1	13.2	39 50.7	10.9	18 55.9	1.9	55.2	68	□	□	□	21 19	22 30	23 20	23 50	
16	60 01.0	13.4	54 20.6	10.8	18 57.8	1.8	55.1	66	□	□	□	20 51	21 58	22 48	23 22	
17	75 00.9	13.5	68 50.4	10.9	18 59.6	1.7	55.1	64	22 26	///	///	20 30	21 33	22 24	23 01	
18	90 00.7	N23 13.6	83 20.3	10.9	N19 01.3	1.6	55.1	62	21 49	///	///	20 13	21 14	22 05	22 44	
19	105 00.6	13.8	97 50.2	10.8	19 02.9	1.5	55.1	60	21 23	23 05	///	19 59	20 59	21 49	22 29	
20	120 00.5	13.9	112 20.0	10.9	19 04.4	1.4	55.1	N 58	21 03	22 18	///	19 46	20 46	21 36	22 17	
21	135 00.3	14.0	126 49.9	10.9	19 05.8	1.3	55.1	56	20 47	21 49	///	19 36	20 34	21 25	22 06	
22	150 00.2	14.2	141 19.8	10.9	19 07.1	1.2	55.0	54	20 33	21 27	23 10	19 26	20 24	21 15	21 57	
23	165 00.1	14.3	155 49.7	11.0	19 08.3	1.1	55.0	52	20 20	21 09	22 26	19 18	20 15	21 06	21 49	
14 00	179 59.9	N23 14.4	170 19.7	10.9	N19 09.4	1.1	55.0	50	20 10	20 54	21 59	19 11	20 07	20 58	21 41	
01	194 59.8	14.6	184 49.6	11.0	19 10.5	0.9	55.0	45	19 47	20 25	21 14	18 55	19 51	20 41	21 25	
02	209 59.7	14.7	199 19.6	10.9	19 11.4	0.8	55.0	N 40	19 29	20 02	20 44	18 42	19 37	20 27	21 12	
03	224 59.5	14.8	213 49.5	11.0	19 12.2	0.8	55.0	35	19 15	19 44	20 21	18 31	19 25	20 15	21 01	
04	239 59.4	14.9	228 19.5	11.0	19 13.0	0.6	54.9	30	19 02	19 29	20 02	18 22	19 15	20 05	20 51	
05	254 59.3	15.1	242 49.5	11.0	19 13.6	0.6	54.9	20	18 40	19 04	19 34	18 05	18 57	19 47	20 34	
06	269 59.2	N23 15.2	257 19.5	11.1	N19 14.2	0.4	54.9	N 10	18 21	18 44	19 11	17 51	18 42	19 31	20 19	
07	284 59.0	15.3	271 49.6	11.0	19 14.6	0.4	54.9	0	18 04	18 26	18 52	17 37	18 27	19 17	20 05	
08	299 58.9	15.5	286 19.6	11.1	19 15.0	0.2	54.9	S 10	17 46	18 09	18 35	17 24	18 13	19 02	19 51	
09	314 58.8	15.6	300 49.7	11.1	19 15.2	0.2	54.9	20	17 28	17 52	18 19	17 09	17 57	18 46	19 36	
10	329 58.6	15.7	315 19.8	11.1	19 15.4	0.1	54.9	30	17 07	17 33	18 03	16 53	17 39	18 28	19 19	
11	344 58.5	15.8	329 49.9	11.1	19 15.5	0.0	54.8	35	16 55	17 23	17 54	16 43	17 29	18 18	19 09	
12	359 58.4	N23 16.0	344 20.0	11.1	N19 15.5	0.1	54.8	40	16 41	17 11	17 45	16 32	17 17	18 06	18 58	
13	14 58.2	16.1	358 50.1	11.2	19 15.4	0.3	54.8	45	16 24	16 58	17 35	16 19	17 04	17 52	18 44	
14	29 58.1	16.2	13 20.3	11.2	19 15.1	0.3	54.8	S 50	16 04	16 42	17 23	16 04	16 47	17 35	18 28	
15	44 58.0	16.3	27 50.5	11.2	19 14.8	0.3	54.8	52	15 54	16 34	17 18	15 57	16 39	17 27	18 20	
16	59 57.8	16.4	42 20.7	11.2	19 14.5	0.5	54.8	54	15 43	16 26	17 13	15 48	16 30	17 17	18 11	
17	74 57.7	16.6	56 50.9	11.3	19 14.0	0.6	54.7	56	15 30	16 17	17 06	15 39	16 20	17 07	18 02	
18	89 57.6	N23 16.7	71 21.2	11.2	N19 13.4	0.7	54.7	58	15 16	16 07	17 00	15 29	16 08	16 56	17 51	
19	104 57.4	16.8	85 51.4	11.3	19 12.7	0.8	54.7	S 60	14 59	15 56	16 52	15 17	15 55	16 42	17 38	
20	119 57.3	16.9	100 21.7	11.4	19 11.9	0.8	54.7									
21	134 57.2	17.0	114 52.1	11.3	19 11.1	1.0	54.7	Day</								

		ARIES		VENUS -4.0		MARS +1.7		JUPITER -2.2		SATURN +0.5		STARS				
G.M.T.		G.H.A.	G.H.A.	Dec.	G.H.A.	Dec.	G.H.A.	Dec.	G.H.A.	Dec.	G.H.A.	Dec.	Name	S.H.A.	Dec.	
d	h															
15	00	263 02.2	226 26.8	N 11 34.2	118 21.8	N 15 27.2	314 00.2	S 19 07.6	322 02.4	S 20 29.7			Acamar	315 48.5	S 40 27.5	
	01	278 04.6	241 27.0	34.9	133 22.9	26.8	329 02.8	07.6	337 05.0	29.7			Achernar	335 56.4	S 57 25.8	
	02	293 07.1	256 27.3	35.5	148 24.0	26.3	344 05.4	07.7	352 07.6	29.7			Acrux	173 53.1	S 62 53.4	
	03	308 09.6	271 27.5	36.2	163 25.0	25.8	359 08.1	07.7	7 10.2	29.7			Adhara	255 43.8	S 28 55.3	
	04	323 12.0	286 27.7	36.8	178 26.1	25.3	14 10.7	07.8	22 12.8	29.8			Aldebaran	291 34.9	N 16 25.8	
	05	338 14.5	301 27.9	37.5	193 27.2	24.8	29 13.3	07.8	37 15.4	29.8						
	06	353 17.0	316 28.1	N 11 38.1	208 28.2	N 15 24.3	44 15.9	S 19 07.9	52 18.1	S 20 29.8			Alioth	166 55.1	N 56 10.5	
	07	8 19.4	331 28.3	38.8	223 29.3	23.8	59 18.6	07.9	67 20.7	29.9			Alkaid	153 29.6	N 49 30.6	
	08	23 21.9	346 28.6	39.4	238 30.4	23.3	74 21.2	07.9	82 23.3	29.9			Al Na'ir	28 32.9	S 47 08.8	
	09	38 24.3	1 28.8	40.1	253 31.4	22.8	89 23.8	08.0	97 25.9	29.9			Alnilam	276 26.6	S 1 13.3	
T H U R S D A Y	10	53 26.8	16 29.0	40.7	268 32.5	22.3	104 26.4	08.0	112 28.5	30.0			Alphard	218 34.9	S 8 29.5	
	11	68 29.3	31 29.2	41.4	283 33.6	21.8	119 29.1	08.1	127 31.1	30.0						
	12	83 31.7	46 29.4	N 11 42.0	298 34.6	N 15 21.3	134 31.7	S 19 08.1	142 33.7	S 20 30.0			Alphecca	126 44.0	N 26 50.8	
	13	98 34.2	61 29.6	42.7	313 35.7	20.8	149 34.3	08.2	157 36.3	30.1			Alpheratz	358 24.2	N 28 52.4	
	14	113 36.7	76 29.8	43.3	328 36.8	20.3	164 36.9	08.2	172 38.9	30.1			Altair	62 46.3	N 8 46.0	
	15	128 39.1	91 30.0	44.0	343 37.8	19.8	179 39.6	08.3	187 41.5	30.1			Ankaa	353 54.6	S 42 30.7	
	16	143 41.6	106 30.2	44.6	358 38.9	19.3	194 42.2	08.3	202 44.1	30.2			Antares	113 14.2	S 26 20.8	
	17	158 44.1	121 30.4	45.3	13 40.0	18.8	209 44.8	08.4	217 46.7	30.2						
	18	173 46.5	136 30.6	N 11 45.9	28 41.0	N 15 18.3	224 47.4	S 19 08.4	232 49.3	S 20 30.2			Arcturus	146 31.4	N 19 23.1	
	19	188 49.0	151 30.8	46.6	43 42.1	17.8	239 50.1	08.5	247 51.9	30.2			Atria	108 50.8	S 68 57.5	
F R I D A Y	20	203 51.5	166 31.0	47.3	58 43.2	17.3	254 52.7	08.5	262 54.5	30.3			Avior	234 34.5	S 59 23.4	
	21	218 53.9	181 31.2	47.9	73 44.2	16.8	269 55.3	08.6	277 57.1	30.3			Bellatrix	279 14.6	N 6 18.8	
	22	233 56.4	196 31.4	48.6	88 45.3	16.3	284 58.0	08.6	292 59.7	30.3			Betelgeuse	271 44.2	N 7 23.9	
	23	248 58.8	211 31.6	49.2	103 46.4	15.8	300 00.6	08.7	308 02.3	30.4						
	16	264 01.3	226 31.8	N 11 49.9	118 47.4	N 15 15.3	315 03.2	S 19 08.7	323 04.9	S 20 30.4			Canopus	264 14.2	S 52 40.6	
	01	279 03.8	241 32.0	50.5	133 48.5	14.8	330 05.8	08.8	338 07.5	30.4			Capella	281 33.1	N 45 57.5	
	02	294 06.2	256 32.2	51.2	148 49.6	14.3	345 08.5	08.8	353 10.1	30.5			Deneb	49 57.9	N 45 08.4	
	03	309 08.7	271 32.4	51.8	163 50.6	13.8	0 11.1	08.9	8 12.7	30.5			Denebola	183 13.8	N 14 47.4	
	04	324 11.2	286 32.6	52.5	178 51.7	13.3	15 13.7	08.9	23 15.3	30.5			Diphda	349 35.4	S 18 11.9	
	05	339 13.6	301 32.8	53.1	193 52.8	12.8	30 16.4	09.0	38 17.9	30.6						
S A T U R D A Y	06	354 16.1	316 33.0	N 11 53.8	208 53.8	N 15 12.3	45 19.0	S 19 09.0	53 20.5	S 20 30.6			Dubhe	194 40.1	N 61 57.9	
	07	9 18.6	331 33.2	54.4	223 54.9	11.8	60 21.6	09.1	68 23.1	30.6			Elmath	279 02.7	N 28 34.4	
	08	24 21.0	346 33.4	55.1	238 56.0	11.3	75 24.3	09.1	83 25.8	30.7			Eltanin	91 03.9	N 51 29.7	
	09	39 23.5	1 33.6	55.8	253 57.0	10.8	90 26.9	09.2	98 28.4	30.7			Enif	34 25.6	N 9 41.8	
	10	54 26.0	16 33.8	56.4	268 58.1	10.3	105 29.5	09.2	113 31.0	30.7			Fomalhaut	16 07.3	S 29 49.5	
	11	69 28.4	31 34.0	57.1	283 59.2	09.8	120 32.2	09.3	128 33.6	30.8						
	12	84 30.9	46 34.2	N 11 57.7	299 00.2	N 15 09.3	135 34.8	S 19 09.3	143 36.2	S 20 30.8			Gacrux	172 44.6	S 56 54.1	
	13	99 33.3	61 34.4	58.4	314 01.3	08.8	150 37.4	09.4	158 38.8	30.8			Gienah	176 32.7	S 17 19.7	
	14	114 35.8	76 34.5	59.0	329 02.4	08.3	165 40.1	09.4	173 41.4	30.8			Hadar	149 43.3	S 60 11.4	
	15	129 38.3	91 34.7	11 59.7	344 03.4	07.8	180 42.7	09.5	188 44.0	30.9			Hamal	328 45.4	N 23 16.6	
M E R C U R Y	16	144 40.7	106 34.9	12 00.3	359 04.5	07.3	195 45.3	09.5	203 46.6	30.9			Kaus Aust.	84 35.6	S 34 24.1	
	17	159 43.2	121 35.1	01.0	14 05.6	06.8	210 48.0	09.6	218 49.2	30.9						
	18	174 45.7	136 35.3	N 12 01.7	29 06.6	N 15 06.3	225 50.6	S 19 09.6	233 51.8	S 20 31.0			Kochab	137 17.5	N 74 19.1	
	19	189 48.1	151 35.5	02.3	44 07.7	05.8	240 53.2	09.7	248 54.4	31.0			Markab	14 17.5	N 14 59.7	
	20	204 50.6	166 35.6	03.0	59 08.8	05.3	255 55.9	09.7	263 57.0	31.0			Menkar	314 56.5	N 3 56.2	
	21	219 53.1	181 35.8	03.6	74 09.8	04.8	270 58.5	09.8	278 59.6	31.1			Menkent	148 53.7	S 36 10.9	
	22	234 55.5	196 36.0	04.3	89 10.9	04.3	286 01.1	09.8	294 02.2	31.1			Miaplacidus	221 48.5	S 69 33.8	
	23	249 58.0	211 36.2	04.9	104 12.0	03.8	301 03.8	09.9	309 04.8	31.1						
	17	00	265 00.5	226 36.4	N 12 05.6	119 13.0	N 15 03.3	316 06.4	S 19 09.9	324 07.5	S 20 31.2			Mirfak	309 37.1	N 49 43.2
	01	280 02.9	241 36.5	06.3	134 14.1	02.8	331 09.0	10.0	339 10.1	31.2			Nunki	76 46.7	S 26 20.6	
02	295 05.4	256 36.7	06.9	149 15.2	02.3	346 11.7	10.0	354 12.7	31.2			Peacock	54 20.7	S 56 51.4		
03	310 07.8	271 36.9	07.6	164 16.2	01.8	1 14.3	10.1	9 15.3	31.3			Pollux	244 16.1	N 28 07.2		
04	325 10.3	286 37.1	08.2	179 17.3	01.3	16 16.9	10.1	24 17.9	31.3			Procyon	245 41.2	N 5 19.4		
05	340 12.8	301 37.2	08.9	194 18.4	00.8	31 19.6	10.2	39 20.5	31.3							
S A T U R D A Y	06	355 15.2	316 37.4	N 12 09.5	209 19.4	N 15 00.3	46 22.2	S 19 10.2	54 23.1	S 20 31.4			Rasalhague	96 42.6	N 12 35.3	
	07	10 17.7	331 37.6	10.2	224 20.5	14 59.8	61 24.9	10.3	69 25.7	31.4			Regulus	208 25.5	N 12 09.4	
	08	25 20.2	346 37.7	10.9	239 21.6	59.3	76 27.5	10.3	84 28.3	31.4			Rigel	281 50.2	S 8 14.8	
	09	40 22.6	1 37.9	11.5	254 22.6	58.8	91 30.1	10.4	99 30.9	31.5			Rigel Kent.	140 45.0	S 60 40.7	
	10	55 25.1	16 38.1	12.2	269 23.7	58.3	106 32.8	10.4	114 33.5	31.5			Sabik	102 57.3	S 15 40.6	
	11	70 27.6	31 38.2	12.8	284 24.7	57.8	121 35.4	10.5	129 36.1	31.5						
	12	85 30.0	46 38.4	N 12 13.5	299 25.8	N 14 57.3	136 38.1	S 19 10.5	144 38.8	S 20 31.5			Schedar	350 25.5	N 56 19.2	
	13	100 32.5	61 38.6	14.2	314 26.9	56.8	151 40.7	10.6	159 41.4	31.6			Shaula	97 14.9	S 37 04.5	
	14	115 34.9	76 38.7	14.8	329 27.9	56.3	166 43.3	10.6	174 44.0	31.6			Sirius	259 08.8	S 16 39.9	
	15	130 37.4	91 38.9	15.5	344 29.0	55.8	181 46.0	10.7	189 46.6	31.6			Spica	159 12.6	N 10 57.6	
M E R C U R Y	16	145 39.9	106 39.1	16.1	359 30.1	55.3	196 48.6	10.7	204 49.2	31.7			Suhail	223 21.6	S 43 16.8	
	17	160 42.3	121 39.2	16.8	14 31.1	54.8	211 51.3	10.8	219 51.8	31.7						
	18	175 44.8	136 39.4	N 12 17.4	29 32.2	N 14 54.3	226 53.9	S 19 10.8	234 54.4	S 20 31.7			Vega	81 05.2	N 38 44.9	
	19	190 47.3	151 39.6	18.1	44 33.3	53.8	241 56.5	10.9	249 57.0	31.8			Zuben'ubi	137 48.7	S 15 52.9	
	20	205 49.7	166 39.7	18.8	59 34.3	53.3	256 59.2	11.0	264 59.6	31.8						
	21	220 52.2	181 39.9	19.4	74 35.4	52.8	272 01.8	11.1	280 02.2	31.8						
	22	235 54.7	196 40.0	20.1	89 36.5	52.2	287 04.5	11.1	295 04.9	31.9						
	23	250 57.1	211 40.2	20.7	104 37.5	51.7	302 07.1	11.1	310 07.5	31.9						
	Mer. Pass.		h m 6 22.9	v 0.2	d 0.7	v 1.1	d 0.5	v 2.6	d 0.0	v 2.6	d 0.0	S.H.A.		Mer. Pass.		
												h m		h m		
											Venus		322 30.5 8 54			
											Mars		214 46.1 16 04			
											Jupiter		51 01.9 2 59			
											Saturn		59 03.6 2 27			

G.M.T.		ARIES		VENUS -4.0		MARS +1.7		JUPITER -2.2		SATURN +0.5		STARS		
		G.H.A.		G.H.A.	Dec.	G.H.A.	Dec.	G.H.A.	Dec.	G.H.A.	Dec.	Name	S.H.A.	Dec.
SUNDAY	d h													
	00	265 59.6	226 40.3	N12 21.4	119 38.6	N14 51.2	317 09.8	S19 11.2	325 10.1	S20 31.9	Acamar	315 48.5	S 40 27.5	
	01	281 02.1	241 40.5	22.1	134 39.7	50.7	332 12.4	11.2	340 12.7	32.0	Achernar	335 56.4	S 57 25.8	
	02	296 04.5	256 40.6	22.7	149 40.7	50.2	347 15.0	11.3	355 15.3	32.0	Acrux	173 53.1	S 62 53.4	
	03	311 07.0	271 40.8	23.4	164 41.8	49.7	2 17.7	11.3	10 17.9	32.0	Adhara	255 43.8	S 28 55.3	
	04	326 09.4	286 41.0	24.0	179 42.9	49.2	17 20.3	11.4	25 20.5	32.1	Aldebaran	291 34.9	N 16 25.8	
	05	341 11.9	301 41.1	24.7	194 43.9	48.7	32 23.0	11.4	40 23.1	32.1				
	06	356 14.4	316 41.3	N12 25.4	209 45.0	N14 48.2	47 25.6	S19 11.5	55 25.7	S20 32.1	Alioth	166 55.1	N 56 10.5	
	07	11 16.8	331 41.4	26.0	224 46.1	47.7	62 28.3	11.5	70 28.4	32.2	Alkaid	153 29.7	N 49 30.6	
	08	26 19.3	346 41.6	26.7	239 47.1	47.2	77 30.9	11.6	85 31.0	32.2	Al Na'ir	28 32.9	S 47 08.7	
	09	41 21.8	1 41.7	27.4	254 48.2	46.7	92 33.6	11.6	100 33.6	32.2	Alnilam	276 26.6	S 1 13.7	
	10	56 24.2	16 41.9	28.0	269 49.3	46.2	107 36.2	11.7	115 36.2	32.3	Alphard	218 34.9	S 8 29.5	
	11	71 26.7	31 42.0	28.7	284 50.3	45.7	122 38.9	11.7	130 38.8	32.3				
	12	86 29.2	46 42.2	N12 29.3	299 51.4	N14 45.2	137 41.5	S19 11.8	145 41.4	S20 32.3	Alphecca	126 44.0	N 26 50.8	
	13	101 31.6	61 42.3	30.0	314 52.5	44.6	152 44.2	11.8	160 44.0	32.4	Alpheratz	358 24.2	N 28 52.4	
	14	116 34.1	76 42.4	30.7	329 53.5	44.1	167 46.8	11.9	175 46.6	32.4	Altair	62 46.3	N 8 46.0	
	15	131 36.5	91 42.6	31.3	344 54.6	43.6	182 49.4	12.0	190 49.2	32.4	Ankaa	353 54.6	S 42 30.7	
	16	146 39.0	106 42.7	32.0	359 55.7	43.1	197 52.1	12.0	205 51.9	32.5	Antares	113 14.2	S 26 20.8	
	17	161 41.5	121 42.9	32.6	14 56.7	42.6	212 54.7	12.1	220 54.5	32.5				
18	176 43.9	136 43.0	N12 33.3	29 57.8	N14 42.1	227 57.4	S19 12.1	235 57.1	S20 32.5	Arcturus	146 31.4	N 19 23.2		
19	191 46.4	151 43.2	34.0	44 58.9	41.6	243 00.0	12.2	250 59.7	32.6	Atria	108 50.7	S 68 57.5		
20	206 48.9	166 43.3	34.6	59 59.9	41.1	258 02.7	12.2	266 02.3	32.6	Avior	234 34.6	S 59 23.4		
21	221 51.3	181 43.4	35.3	75 01.0	40.6	273 05.3	12.3	281 04.9	32.6	Bellatrix	279 14.5	N 6 18.8		
22	236 53.8	196 43.6	36.0	90 02.1	40.1	288 08.0	12.3	296 07.5	32.7	Betelgeuse	271 44.2	N 7 23.9		
23	251 56.3	211 43.7	36.6	105 03.1	39.6	303 10.6	12.4	311 10.1	32.7					
MONDAY	00	266 58.7	226 43.8	N12 37.3	120 04.2	N14 39.0	318 13.3	S19 12.4	326 12.8	S20 32.7	Canopus	264 14.2	S 52 40.6	
	01	282 01.2	241 44.0	38.0	135 05.2	38.5	333 15.9	12.5	341 15.4	32.8	Capella	281 33.0	N 45 57.5	
	02	297 03.7	256 44.1	38.6	150 06.3	38.0	348 18.6	12.5	356 18.0	32.8	Deneb	49 57.9	N 45 08.4	
	03	312 06.1	271 44.2	39.3	165 07.4	37.5	3 21.2	12.6	11 20.6	32.8	Denebola	183 13.8	N 14 47.4	
	04	327 08.6	286 44.4	39.9	180 08.4	37.0	18 23.9	12.7	26 23.2	32.9	Diphda	349 35.4	S 18 11.9	
	05	342 11.0	301 44.5	40.6	195 09.5	36.5	33 26.6	12.7	41 25.8	32.9				
	06	357 13.5	316 44.6	N12 41.3	210 10.6	N14 36.0	48 29.2	S19 12.8	56 28.4	S20 32.9	Dubhe	194 40.1	N 61 57.9	
	07	12 16.0	331 44.8	41.9	225 11.6	35.5	63 31.9	12.8	71 31.1	33.0	Elnath	279 02.7	N 28 34.4	
	08	27 18.4	346 44.9	42.6	240 12.7	35.0	78 34.5	12.9	86 33.7	33.0	Eltanin	91 03.9	N 51 29.7	
	09	42 20.9	1 45.0	43.3	255 13.8	34.4	93 37.2	12.9	101 36.3	33.0	Enif	34 25.5	N 9 41.8	
	10	57 23.4	16 45.2	43.9	270 14.8	33.9	108 39.8	13.0	116 38.9	33.1	Fomalhaut	16 07.3	S 29 49.5	
	11	72 25.8	31 45.3	44.6	285 15.9	33.4	123 42.5	13.0	131 41.5	33.1				
	12	87 28.3	46 45.4	N12 45.2	300 17.0	N14 32.9	138 45.1	S19 13.1	146 44.1	S20 33.1	Gacrux	172 44.6	S 56 54.1	
	13	102 30.8	61 45.5	45.9	315 18.0	32.4	153 47.8	13.1	161 46.7	33.1	Gienah	176 32.7	S 17 19.7	
	14	117 33.2	76 45.7	46.6	330 19.1	31.9	168 50.4	13.2	176 49.4	33.2	Hadar	149 43.3	S 60 11.4	
	15	132 35.7	91 45.8	47.2	345 20.2	31.4	183 53.1	13.3	191 52.0	33.2	Hamal	328 45.4	N 23 16.6	
	16	147 38.2	106 45.9	47.9	0 21.2	30.9	198 55.7	13.3	206 54.6	33.2	Kaus Aust.	84 35.6	S 34 24.1	
	17	162 40.6	121 46.0	48.6	15 22.3	30.3	213 58.4	13.4	221 57.2	33.3				
	18	177 43.1	136 46.1	N12 49.2	30 23.4	N14 29.8	229 01.0	S19 13.4	236 59.8	S20 33.3	Kochab	137 17.5	N 74 19.2	
19	192 45.5	151 46.3	49.9	45 24.4	29.3	244 03.7	13.5	252 02.4	33.3	Markab	14 17.4	N 14 59.7		
20	207 48.0	166 46.4	50.6	60 25.5	28.8	259 06.4	13.5	267 05.0	33.4	Menkar	314 56.4	N 3 56.2		
21	222 50.5	181 46.5	51.2	75 26.6	28.3	274 09.0	13.6	282 07.7	33.4	Menkent	148 53.7	S 36 10.9		
22	237 52.9	196 46.6	51.9	90 27.6	27.8	289 11.7	13.6	297 10.3	33.4	Miaplacidus	221 48.6	S 69 33.8		
23	252 55.4	211 46.7	52.5	105 28.7	27.3	304 14.3	13.7	312 12.9	33.5					
TUESDAY	00	267 57.9	226 46.8	N12 53.2	120 29.8	N14 26.8	319 17.0	S19 13.8	327 15.5	S20 33.5	Mirfak	309 37.1	N 49 43.2	
	01	283 00.3	241 47.0	53.9	135 30.8	26.2	334 19.6	13.8	342 18.1	33.5	Nunki	76 46.7	S 26 20.6	
	02	298 02.8	256 47.1	54.5	150 31.9	25.7	349 22.3	13.9	357 20.7	33.6	Peacock	54 20.7	S 56 51.4	
	03	313 05.3	271 47.2	55.2	165 33.0	25.2	4 25.0	13.9	12 23.4	33.6	Pollux	244 16.1	N 28 07.2	
	04	328 07.7	286 47.3	55.9	180 34.0	24.7	19 27.6	14.0	27 26.0	33.7	Procyon	245 41.2	N 5 19.4	
	05	343 10.2	301 47.4	56.5	195 35.1	24.2	34 30.3	14.0	42 28.6	33.7				
	06	358 12.6	316 47.5	N12 57.2	210 36.2	N14 23.7	49 32.9	S19 14.1	57 31.2	S20 33.7	Rasalhague	96 42.6	N 12 35.3	
	07	13 15.1	331 47.6	57.9	225 37.2	23.2	64 35.6	14.1	72 33.8	33.8	Regulus	208 25.5	N 12 09.4	
	08	28 17.6	346 47.7	58.5	240 38.3	22.6	79 38.3	14.2	87 36.4	33.8	Rigel	281 50.2	S 8 14.8	
	09	43 20.0	1 47.9	59.2	255 39.4	22.1	94 40.9	14.3	102 39.1	33.8	Rigel Kent.	140 45.0	S 60 40.7	
	10	58 22.5	16 48.0	12 59.9	270 40.4	21.6	109 43.6	14.3	117 41.7	33.9	Sabik	102 57.3	S 15 40.6	
	11	73 25.0	31 48.1	13 00.5	285 41.5	21.1	124 46.2	14.4	132 44.3	33.9				
	12	88 27.4	46 48.2	N13 01.2	300 42.6	N14 20.6	139 48.9	S19 14.4	147 46.9	S20 33.9	Schedar	350 25.5	N 56 19.2	
	13	103 29.9	61 48.3	01.8	315 43.6	20.1	154 51.6	14.5	162 49.5	34.0	Shaula	97 14.9	S 37 04.5	
	14	118 32.4	76 48.4	02.5	330 44.7	19.5	169 54.2	14.5	177 52.1	34.0	Sirius	259 08.8	S 16 39.9	
	15	133 34.8	91 48.5	03.2	345 45.8	19.0	184 56.9	14.6	192 54.8	34.0	Spica	159 12.6	S 10 57.6	
	16	148 37.3	106 48.6	03.8	0 46.8	18.5	199 59.5	14.6	207 57.4	34.1	Suhail	223 21.7	S 43 16.8	
	17	163 39.8	121 48.7	04.5	15 47.9	18.0	215 02.2	14.7	223 00.0	34.1				
	18	178 42.2	136 48.8	N13 05.2	30 48.9	N14 17.5	230 04.9	S19 14.8	238 02.6	S20 34.1	Vega	81 05.1	N 38 44.9	
19	193 44.7	151 48.9	05.8	45 50.0	17.0	245 07.5	14.8	253 05.2	34.2	Zuben'ubi	137 48.7	S 15 52.9		
20	208 47.1	166 49.0	06.5	60 51.1	16.4	260 10.2	14.9	268 07.8	34.2					
21	223 49.6	181 49.1	07.2	75 52.1	15.9	275 12.9	14.9	283 10.5	34.2					
22	238 52.1	196 49.2	07.8	90 53.2	15.4	290 15.5	15.0	298 13.1	34.3					
23	253 54.5	211 49.3	08.5	105 54.3	14.9	305 18.2	15.0	313 15.7	34.3					
Mer. Pass.		6 11.1	v 0.1	d 0.7	v 1.1	d 0.5	v 2.7	d 0.1	v 2.6	d 0.0				
											Venus	319 45.1	8 53	
											Mars	213 05.5	15 59	
											Jupiter	51 14.6	2 47	
											Saturn	59 14.1	2 15	

G.M.T.		ARIES	VENUS -3.9		MARS +1.8		JUPITER -2.2		SATURN +0.5		STARS		
		G.H.A.	G.H.A.	Dec.	G.H.A.	Dec.	G.H.A.	Dec.	G.H.A.	Dec.	Name	S.H.A.	Dec.
WEDNESDAY	21 00	268 57.0	226 49.4	N13 09.2	120 55.3	N14 14.4	320 20.9	S19 15.1	328 18.3	S20 34.3	Acamar	315 48.5	S 40 27.5
	01	283 59.5	241 49.5	09.8	135 56.4	13.9	335 23.5	15.2	343 20.9	34.4	Achernar	335 56.3	S 57 25.8
	02	299 01.9	256 49.6	10.5	150 57.5	13.3	350 26.2	15.2	358 23.6	34.4	Acrux	173 53.1	S 62 53.4
	03	314 04.4	271 49.7	11.2	165 58.5	12.8	5 28.8	15.3	13 26.2	34.4	Adhara	255 43.8	S 28 55.3
	04	329 06.9	286 49.7	11.8	180 59.6	12.3	20 31.5	15.3	28 28.8	34.5	Aldebaran	291 34.8	N 16 25.8
	05	344 09.3	301 49.8	12.5	196 00.7	11.8	35 34.2	15.4	43 31.4	34.5			
	06	359 11.8	316 49.9	N13 13.2	211 01.7	N14 11.3	50 36.8	S19 15.4	58 34.0	S20 34.5	Alioth	166 55.1	N 56 10.5
	07	14 14.3	331 50.0	13.8	226 02.8	10.8	65 39.5	15.5	73 36.6	34.6	Alkaid	153 29.7	N 49 30.7
	08	29 16.7	346 50.1	14.5	241 03.9	10.2	80 42.2	15.6	88 39.3	34.6	Al Na'ir	28 32.9	S 47 08.7
	09	44 19.2	1 50.2	15.2	256 04.9	09.7	95 44.8	15.6	103 41.9	34.6	Alnilam	276 26.6	S 1 13.6
	10	59 21.6	16 50.3	15.8	271 06.0	09.2	110 47.5	15.7	118 44.5	34.7	Alphard	218 34.9	S 8 29.5
	11	74 24.1	31 50.4	16.5	286 07.1	08.7	125 50.2	15.7	133 47.1	34.7			
	12	89 26.6	46 50.5	N13 17.1	301 08.1	N14 08.2	140 52.8	S19 15.8	148 49.7	S20 34.7	Alphecca	126 44.0	N 26 50.6
	13	104 29.0	61 50.5	17.8	316 09.2	07.8	155 55.5	15.8	163 52.4	34.8	Alpheratz	358 24.2	N 28 52.4
	14	119 31.5	76 50.6	18.5	331 10.3	07.1	170 58.2	15.9	178 55.0	34.8	Altair	62 46.3	N 8 46.0
	15	134 34.0	91 50.7	19.1	346 11.3	06.6	186 00.9	16.0	193 57.6	34.8	Ankaa	353 54.5	S 42 30.7
	16	149 36.4	106 50.8	19.8	1 12.4	06.1	201 03.5	16.0	209 00.2	34.9	Antares	113 14.2	S 26 20.8
	17	164 38.9	121 50.9	20.5	16 13.5	05.6	216 06.2	16.1	224 02.8	34.9			
	18	179 41.4	136 50.9	N13 21.1	31 14.5	N14 05.0	231 08.9	S19 16.1	239 05.5	S20 34.9	Arcturus	146 31.4	N 19 29.2
	19	194 43.8	151 51.0	21.8	46 15.6	04.5	246 11.5	16.2	254 08.1	35.0	Atria	108 50.7	S 68 57.5
	20	209 46.3	166 51.1	22.5	61 16.6	04.0	261 14.2	16.3	269 10.7	35.0	Avior	234 34.6	S 59 23.3
	21	224 48.8	181 51.2	23.1	76 17.7	03.5	276 16.9	16.3	284 13.3	35.0	Bellatrix	279 14.5	N 6 18.8
	22	239 51.2	196 51.3	23.8	91 18.8	03.0	291 19.5	16.4	299 15.9	35.1	Betelgeuse	271 44.2	N 7 23.9
23	254 53.7	211 51.3	24.5	106 19.8	02.4	306 22.2	16.4	314 18.6	35.1				
THURSDAY	22 00	269 56.1	226 51.4	N13 25.1	121 20.9	N14 01.9	321 24.9	S19 16.5	329 21.2	S20 35.2	Canopus	264 14.2	S 52 40.6
	01	284 58.6	241 51.5	25.8	136 22.0	01.4	336 27.6	16.6	344 23.8	35.2	Capella	281 33.0	N 45 57.4
	02	300 01.1	256 51.6	26.5	151 23.0	00.9	351 30.2	16.6	359 26.4	35.2	Deneb	49 57.9	N 45 08.4
	03	315 03.5	271 51.6	27.1	166 24.1	14 00.4	6 32.9	16.7	14 29.1	35.3	Denebola	183 13.8	N 14 47.4
	04	330 06.0	286 51.7	27.8	181 25.2	13 59.8	21 35.6	16.7	29 31.7	35.3	Diphda	349 35.4	S 18 11.8
	05	345 08.5	301 51.8	28.5	196 26.2	59.3	36 38.2	16.8	44 34.3	35.3			
	06	0 10.9	316 51.8	N13 29.1	211 27.3	N13 58.8	51 40.9	S19 16.8	59 36.9	S20 35.4	Dubhe	194 40.1	N 61 57.9
	07	15 13.4	331 51.9	29.8	226 28.4	58.3	66 43.6	16.9	74 39.5	35.4	Elmath	279 02.7	N 28 34.4
	08	30 15.9	346 52.0	30.5	241 29.4	57.7	81 46.3	17.0	89 42.2	35.4	Eltanin	91 03.9	N 51 29.7
	09	45 18.3	1 52.1	31.1	256 30.5	57.2	96 48.9	17.0	104 44.8	35.5	Enif	34 25.5	N 9 41.8
	10	60 20.8	16 52.1	31.8	271 31.6	56.7	111 51.6	17.1	119 47.4	35.5	Fomalhaut	16 07.2	S 29 49.5
	11	75 23.2	31 52.2	32.5	286 32.6	56.2	126 54.3	17.1	134 50.0	35.5			
	12	90 25.7	46 52.3	N13 33.1	301 33.7	N13 55.6	141 57.0	S19 17.2	149 52.6	S20 35.6	Gacrux	172 44.6	S 56 54.1
	13	105 28.2	61 52.3	33.8	316 34.8	55.1	156 59.6	17.3	164 55.3	35.6	Gienah	176 32.7	S 17 19.7
	14	120 30.6	76 52.4	34.4	331 35.8	54.6	172 02.3	17.3	179 57.9	35.6	Hadar	149 43.3	S 60 11.4
	15	135 33.1	91 52.4	35.1	346 36.9	54.1	187 05.0	17.4	195 00.5	35.7	Hamal	328 45.3	N 23 16.6
	16	150 35.6	106 52.5	35.8	1 38.0	53.6	202 07.7	17.4	210 03.1	35.7	Kaus Aust.	84 35.6	S 34 24.1
	17	165 38.0	121 52.6	36.4	16 39.0	53.0	217 10.3	17.5	225 05.8	35.7			
	18	180 40.5	136 52.6	N13 37.1	31 40.1	N13 52.5	232 13.0	S19 17.6	240 08.4	S20 35.8	Kochab	137 17.6	N 74 19.2
	19	195 43.0	151 52.7	37.8	46 41.2	52.0	247 15.7	17.6	255 11.0	35.8	Markab	14 17.4	N 14 59.7
	20	210 45.4	166 52.7	38.4	61 42.2	51.5	262 18.4	17.7	270 13.6	35.8	Menkar	314 56.4	N 3 56.2
	21	225 47.9	181 52.8	39.1	76 43.3	50.9	277 21.0	17.7	285 16.2	35.9	Menkent	148 53.7	S 36 10.9
	22	240 50.4	196 52.9	39.8	91 44.3	50.4	292 23.7	17.8	300 18.9	35.9	Miaplacidus	221 48.6	S 69 33.8
23	255 52.8	211 52.9	40.4	106 45.4	49.9	307 26.4	17.9	315 21.5	35.9				
FRIDAY	23 00	270 55.3	226 53.0	N13 41.1	121 46.5	N13 49.4	322 29.1	S19 17.9	330 24.1	S20 36.0	Mirfak	309 37.1	N 49 43.2
	01	285 57.7	241 53.0	41.8	136 47.5	48.8	337 31.8	18.0	345 26.7	36.0	Nunki	76 46.7	S 26 20.6
	02	301 00.2	256 53.1	42.4	151 48.6	48.3	352 34.4	18.0	0 29.4	36.0	Peacock	54 20.7	S 56 51.4
	03	316 02.7	271 53.1	43.1	166 49.7	47.8	7 37.1	18.1	15 32.0	36.1	Pollux	244 16.1	N 28 07.2
	04	331 05.1	286 53.2	43.8	181 50.7	47.3	22 39.8	18.2	30 34.6	36.1	Procyon	245 41.2	N 5 19.4
	05	346 07.6	301 53.2	44.4	196 51.8	46.7	37 42.5	18.2	45 37.2	36.1			
	06	1 10.1	316 53.3	N13 45.1	211 52.9	N13 46.2	52 45.1	S19 18.3	60 39.9	S20 36.2	Rasalhague	96 42.6	N 12 35.3
	07	16 12.5	331 53.3	45.8	226 53.9	45.7	67 47.8	18.3	75 42.5	36.2	Regulus	208 25.5	N 12 09.4
	08	31 15.0	346 53.4	46.4	241 55.0	45.2	82 50.5	18.4	90 45.1	36.2	Rigel	281 50.2	S 8 14.8
	09	46 17.5	1 53.4	47.1	256 56.1	44.6	97 53.2	18.5	105 47.7	36.3	Rigel Kent.	140 45.0	S 60 40.7
	10	61 19.9	16 53.5	47.7	271 57.1	44.1	112 55.9	18.5	120 50.3	36.3	Sabik	102 57.3	S 15 40.6
	11	76 22.4	31 53.5	48.4	286 58.2	43.6	127 58.5	18.6	135 53.0	36.4			
	12	91 24.8	46 53.6	N13 49.1	301 59.3	N13 43.1	143 01.2	S19 18.6	150 55.6	S20 36.4	Schedar	350 25.4	N 56 19.2
	13	106 27.3	61 53.6	49.7	317 00.3	42.5	158 03.9	18.7	165 58.2	36.4	Shaula	97 14.9	S 37 04.5
	14	121 29.8	76 53.7	50.4	332 01.4	42.0	173 06.6	18.8	181 00.8	36.5	Sirius	259 08.8	S 16 39.9
	15	136 32.2	91 53.7	51.1	347 02.5	41.5	188 09.3	18.8	196 03.5	36.5	Spica	159 12.6	S 10 57.6
	16	151 34.7	106 53.8	51.7	2 03.5	40.9	203 12.0	18.9	211 06.1	36.5	Suhail	223 21.7	S 43 16.8
	17	166 37.2	121 53.8	52.4	17 04.6	40.4	218 14.6	18.9	226 08.7	36.6			
	18	181 39.6	136 53.8	N13 53.1	32 05.7	N13 39.9	233 17.3	S19 19.0	241 11.3	S20 36.6	Vega	81 05.1	N 38 44.9
	19	196 42.1	151 53.9	53.7	47 06.7	39.4	248 20.0	19.1	256 14.0	36.6	Zuben'ubi	137 48.8	S 15 52.9
	20	211 44.6	166 53.9	54.4	62 07.8	38.8	263 22.7	19.1	271 16.6	36.7			
	21	226 47.0	181 54.0	55.1	77 08.8	38.3	278 25.4	19.2	286 19.2	36.7			
	22	241 49.5	196 54.0	55.7	92 09.9	37.8	293 28.1	19.2	301 21.9	36.7			
23	256 52.0	211 54.0	56.4	107 11.0	37.3	308 30.7	19.3	316 24.5	36.8				
Mer. Pass.		h 5 m 59.3	v 0.1	d 0.7	v 1.1	d 0.5	v 2.7	d 0.1	v 2.6	d 0.0	S.H.A.		Mer. Pass.
											h m		
											Venus		316 55.3
											Mars		211 24.8
											Jupiter		51 28.8
											Saturn		59 25.1

G.M.T.		SUN		MOON				Lat.	Twilight		Sun-rise	Moonrise										
		G.H.A.	Dec.	G.H.A.	φ	Dec.	d		H.P.	Naut.		Civil	21	22	23	24						
d	h	°	'	°	'	°	'	'	°	h	m	h	m	h	m	h	m	h	m			
21	00	179	37.3	N23	26.4	92	28.1	14.7	N	3	59.3	9.8	54.9	N 72	□	□	□	11 47	13 26	15 10	17 01	
	01	194	37.1		26.4	107	01.8	14.8		3	49.5	9.8	54.9	N 70	□	□	□	11 50	13 23	15 00	16 42	
	02	209	37.0		26.5	121	35.6	14.7		3	39.7	9.8	54.9	68	□	□	□	11 52	13 20	14 52	16 27	
	03	224	36.9	..	26.5	136	09.3	14.7		3	29.9	9.8	54.9	66	□	□	□	11 54	13 18	14 45	16 15	
	04	239	36.7		26.5	150	43.0	14.7		3	20.1	9.9	54.9	64	///	///	01 31	11 55	13 16	14 39	16 05	
	05	254	36.6		26.5	165	16.7	14.7		3	10.2	9.9	55.0	62	///	///	02 09	11 57	13 14	14 34	15 57	
	06	269	36.4	N23	26.5	179	50.4	14.7	N	3	00.3	9.9	55.0	60	///	00 49	02 36	11 58	13 13	14 30	15 49	
	07	284	36.3		26.5	194	24.1	14.6		2	50.4	9.9	55.0	N 58	///	01 41	02 56	11 59	13 11	14 26	15 43	
	08	299	36.2		26.5	208	57.7	14.7		2	40.5	9.9	55.0	56	///	02 11	03 13	12 00	13 10	14 22	15 37	
	09	314	36.0	..	26.5	223	31.4	14.6		2	30.6	10.0	55.0	54	00 45	02 33	03 27	12 01	13 09	14 19	15 32	
WEDNESDAY	10	329	35.9		26.5	238	05.0	14.6		2	20.6	10.0	55.1	52	01 32	02 51	03 40	12 02	13 08	14 17	15 28	
	11	344	35.8		26.5	252	38.6	14.6		2	10.6	10.0	55.1	50	02 00	03 06	03 51	12 02	13 07	14 14	15 24	
	12	359	35.6	N23	26.5	267	12.2	14.6	N	2	00.6	10.0	55.1	45	02 46	03 36	04 13	12 04	13 05	14 09	15 15	
	13	14	35.5		26.5	281	45.8	14.5		1	50.6	10.0	55.1	N 40	03 17	03 58	04 31	12 05	13 04	14 05	15 08	
	14	29	35.4		26.5	296	19.3	14.6		1	40.6	10.1	55.2	35	03 40	04 17	04 46	12 06	13 03	14 01	15 01	
	15	44	35.2	..	26.5	310	52.9	14.5		1	30.5	10.1	55.2	30	03 59	04 32	04 59	12 07	13 01	13 57	14 56	
	16	59	35.1		26.5	325	26.4	14.5		1	20.4	10.0	55.2	20	04 28	04 57	05 22	12 09	12 59	13 52	14 46	
	17	74	34.9		26.5	339	59.9	14.4		1	10.4	10.1	55.2	N 10	04 50	05 18	05 41	12 10	12 58	13 47	14 38	
	18	89	34.8	N23	26.5	354	33.3	14.5	N	1	00.3	10.1	55.3	0	05 09	05 36	05 58	12 12	12 56	13 42	14 30	
	19	104	34.7		26.5	9	06.8	14.4		0	50.2	10.2	55.3	S 10	05 26	05 53	06 16	12 13	12 54	13 37	14 22	
THURSDAY	20	119	34.5		26.5	23	40.2	14.4		0	40.0	10.1	55.3	20	05 43	06 10	06 34	12 15	12 53	13 32	14 14	
	21	134	34.4	..	26.5	38	13.6	14.4		0	29.9	10.1	55.3	30	05 59	06 29	06 56	12 17	12 51	13 27	14 05	
	22	149	34.3		26.5	52	47.0	14.3		0	19.8	10.2	55.4	35	06 08	06 40	07 08	12 18	12 50	13 23	14 00	
	23	164	34.1		26.5	67	20.3	14.3	N	0	09.6	10.2	55.4	40	06 17	06 51	07 22	12 19	12 49	13 20	13 54	
	00	179	34.0	N23	26.5	81	53.6	14.3	S	0	00.6	10.1	55.4	45	06 28	07 05	07 39	12 20	12 47	13 16	13 47	
	01	194	33.9		26.5	96	26.9	14.3		0	10.7	10.2	55.4	S 50	06 40	07 21	08 00	12 22	12 46	13 11	13 39	
	02	209	33.7		26.5	111	00.2	14.2		0	20.9	10.2	55.5	52	06 45	07 29	08 10	12 22	12 45	13 08	13 35	
	03	224	33.6	..	26.5	125	33.4	14.2		0	31.1	10.2	55.5	54	06 51	07 37	08 21	12 23	12 44	13 06	13 31	
	04	239	33.5		26.5	140	06.6	14.1		0	41.3	10.2	55.5	56	06 57	07 46	08 33	12 24	12 43	13 03	13 26	
	05	254	33.3		26.5	154	39.7	14.1		0	51.5	10.2	55.6	58	07 04	07 56	08 48	12 25	12 42	13 00	13 21	
FRIDAY	06	269	33.2	N23	26.5	169	12.8	14.1	S	1	01.7	10.3	55.6	S 60	07 11	08 08	09 06	12 26	12 41	12 57	13 15	
	07	284	33.1		26.4	183	45.9	14.1		1	12.0	10.2	55.6	Lat.	Sun-set	Twilight		Moonset				
	08	299	32.9		26.4	198	19.0	14.0		1	22.2	10.2	55.6	Civil	Naut.	21	22	23	24			
	09	314	32.8	..	26.4	212	52.0	14.0		1	32.4	10.3	55.7	°	h	m	h	m	h	m	h	m
	10	329	32.6		26.4	227	25.0	13.9		1	42.7	10.2	55.7	N 72	□	□	□	00 38	00 31	00 23	00 15	
	11	344	32.5		26.4	241	57.9	14.0		1	52.9	10.3	55.7	N 70	□	□	□	00 33	00 31	00 29	00 27	
	12	359	32.4	N23	26.4	256	30.9	13.8	S	2	03.2	10.2	55.8	68	□	□	□	00 29	00 31	00 34	00 37	
	13	14	32.2		26.4	271	03.7	13.9		2	13.4	10.3	55.8	66	□	□	□	00 25	00 31	00 38	00 45	
	14	29	32.1		26.3	285	36.6	13.7		2	23.7	10.2	55.8	64	22 33	///	///	00 22	00 31	00 41	00 52	
	15	44	32.0	..	26.3	300	09.3	13.8		2	33.9	10.3	55.9	62	21 54	///	///	00 19	00 32	00 44	00 58	
SATURDAY	16	59	31.8		26.3	314	42.1	13.7		2	44.2	10.2	55.9	60	21 28	23 15	///	00 17	00 32	00 47	01 04	
	17	74	31.7		26.3	329	14.8	13.7		2	54.4	10.3	55.9	N 58	21 07	22 23	///	00 15	00 32	00 49	01 08	
	18	89	31.6	N23	26.3	343	47.5	13.6	S	3	04.7	10.2	55.9	56	20 50	21 53	///	00 13	00 32	00 51	01 12	
	19	104	31.4		26.3	358	20.1	13.6		3	14.9	10.2	56.0	54	20 36	21 31	23 19	00 12	00 32	00 53	01 16	
	20	119	31.3		26.2	12	52.7	13.5		3	25.1	10.3	56.0	52	20 24	21 13	22 31	00 10	00 32	00 55	01 19	
	21	134	31.2	..	26.2	27	25.2	13.5		3	35.4	10.2	56.0	50	20 13	20 58	22 03	00 09	00 32	00 57	01 23	
	22	149	31.0		26.2	41	57.7	13.4		3	45.6	10.3	56.1	45	19 50	20 28	21 18	00 06	00 32	01 00	01 29	
	23	164	30.9		26.2	56	30.1	13.4		3	55.9	10.2	56.1	N 40	19 32	20 05	20 47	00 03	00 32	01 03	01 35	
	00	179	30.8	N23	26.1	71	02.5	13.3	S	4	06.1	10.2	56.1	35	19 17	19 47	20 24	00 01	00 33	01 05	01 40	
	01	194	30.6		26.1	85	34.8	13.3		4	16.3	10.2	56.2	30	19 04	19 32	20 05	24 33	00 33	01 07	01 44	
SUNDAY	02	209	30.5		26.1	100	07.1	13.2		4	26.5	10.2	56.2	20	18 42	19 07	19 36	24 33	00 33	01 11	01 52	
	03	224	30.4	..	26.1	114	39.3	13.2		4	36.7	10.2	56.2	N 10	18 23	18 46	19 13	24 33	00 33	01 15	01 58	
	04	239	30.2		26.0	129	11.5	13.2		4	46.9	10.2	56.3	0	18 05	18 28	18 54	24 33	00 33	01 18	02 05	
	05	254	30.1		26.0	143	43.7	13.0		4	57.1	10.2	56.3	S 10	17 48	18 11	18 37	24 33	00 33	01 21	02 11	
	06	269	30.0	N23	26.0	158	15.7	13.1	S	5	07.3	10.1	56.3	20	17 30	17 54	18 21	24 33	00 33	01 24	02 18	
	07	284	29.8		26.0	172	47.8	12.9		5	17.4	10.2	56.4	30	17 08	17 35	18 04	24 33	00 33	01 28	02 25	
	08	299	29.7		25.9	187	19.7	13.0		5	27.6	10.1	56.4	35	16 56	17 24	17 56	24 33	00 33	01 30	02 29	
	09	314	29.6	..	25.9	201	51.7	12.8		5	37.7	10.2	56.4	40	16 42	17 12	17 46	24 33	00 33	01 33	02 34	
	10	329	29.4		25.9	216	23.5	12.8		5	47.9	10.1	56.5	45	16 25	16 59	17 36	24 33	00 33	01 36	02 40	
	11	344	29.3		25.8	230	55.3	12.8		5	58.0	10.1	56.5									



G.M.T.	ARIES		VENUS -3.9		MARS +1.8		JUPITER -2.2		SATURN +0.4		STARS		
	G.H.A.		G.H.A.	Dec.	G.H.A.	Dec.	G.H.A.	Dec.	G.H.A.	Dec.	Name	S.H.A.	Dec.
24													
00	271 54.4		226 54.1	N13 57.0	122 12.0	N13 36.7	323 33.4	S19 19.4	331 27.1	S20 36.8	Acamar	315 48.5	S 40 27.5
01	286 56.9		241 54.1	57.7	137 13.1	36.2	338 36.1	19.4	346 29.7	36.8	Achernar	335 56.3	S 57 25.8
02	301 59.3		256 54.2	58.4	152 14.2	35.7	353 38.8	19.5	1 32.4	36.9	Acrux	173 53.1	S 62 53.4
03	317 01.8		271 54.2	59.0	167 15.2	35.1	8 41.5	19.6	16 35.0	36.9	Adhara	255 43.8	S 28 55.3
04	332 04.3		286 54.2	13 59.7	182 16.3	34.6	23 44.2	19.6	31 37.6	37.0	Aldebaran	291 34.8	N 16 25.8
05	347 06.7		301 54.3	14 00.4	197 17.4	34.1	38 46.8	19.7	46 40.2	37.0			
06	2 09.2		316 54.3	N14 01.0	212 18.4	N13 33.5	53 49.5	S19 19.7	61 42.9	S20 37.0	Alioth	166 55.1	N 56 10.5
07	17 11.7		331 54.3	01.7	227 19.5	33.0	68 52.2	19.8	76 45.5	37.1	Alkaid	153 29.7	N 49 30.7
08	32 14.1		346 54.3	02.4	242 20.6	32.5	83 54.9	19.9	91 48.1	37.1	Al Na'ir	28 32.8	S 47 08.7
09	47 16.6		1 54.4	03.0	257 21.6	32.0	98 57.6	19.9	106 50.7	37.1	Alnilam	276 26.6	S 1 13.6
10	62 19.1		16 54.4	03.7	272 22.7	31.4	114 00.3	20.0	121 53.4	37.2	Alphard	218 34.9	S 8 29.5
11	77 21.5		31 54.4	04.3	287 23.8	30.9	129 03.0	20.1	136 56.0	37.2			
12	92 24.0		46 54.5	N14 05.0	302 24.8	N13 30.4	144 05.7	S19 20.1	151 58.6	S20 37.2	Alphecca	126 44.0	N 26 50.9
13	107 26.5		61 54.5	05.7	317 25.9	29.8	159 08.3	20.2	167 01.2	37.3	Alpheratz	358 24.2	N 28 55.2
14	122 28.9		76 54.5	06.3	332 27.0	29.3	174 11.0	20.2	182 03.9	37.3	Altair	62 46.3	N 8 46.0
15	137 31.4		91 54.5	07.0	347 28.0	28.8	189 13.7	20.3	197 06.5	37.3	Ankaa	353 54.5	S 42 30.7
16	152 33.8		106 54.6	07.7	2 29.1	28.2	204 16.4	20.4	212 09.1	37.4	Antares	113 14.2	S 26 20.8
17	167 36.3		121 54.6	08.3	17 30.1	27.7	219 19.1	20.4	227 11.8	37.4			
18	182 38.8		136 54.6	N14 09.0	32 31.2	N13 27.2	234 21.8	S19 20.5	242 14.4	S20 37.4	Arcturus	146 31.4	N 19 23.2
19	197 41.2		151 54.6	09.6	47 32.3	26.6	249 24.5	20.5	257 17.0	37.5	Atria	108 50.7	S 68 57.5
20	212 43.7		166 54.6	10.3	62 33.3	26.1	264 27.2	20.6	272 19.6	37.5	Avior	234 34.6	S 59 23.3
21	227 46.2		181 54.7	11.0	77 34.4	25.6	279 29.9	20.7	287 22.3	37.6	Bellatrix	279 14.5	N 6 18.8
22	242 48.6		196 54.7	11.6	92 35.5	25.0	294 32.5	20.7	302 24.9	37.6	Betelgeuse	271 44.2	N 7 23.9
23	257 51.1		211 54.7	12.3	107 36.5	24.5	309 35.2	20.8	317 27.5	37.6			
25													
00	272 53.6		226 54.7	N14 13.0	122 37.6	N13 24.0	324 37.9	S19 20.9	332 30.2	S20 37.7	Canopus	264 14.2	S 52 40.6
01	287 56.0		241 54.7	13.6	137 38.7	23.4	339 40.6	20.9	347 32.8	37.7	Capella	281 33.0	N 45 57.4
02	302 58.5		256 54.7	14.3	152 39.7	22.9	354 43.3	21.0	2 35.4	37.7	Deneb	49 57.8	N 45 08.4
03	318 00.9		271 54.8	14.9	167 40.8	22.4	9 46.0	21.0	17 38.0	37.8	Denebola	183 13.8	N 14 47.4
04	333 03.4		286 54.8	15.6	182 41.9	21.9	24 48.7	21.1	32 40.7	37.8	Diphda	349 35.4	S 18 11.8
05	348 05.9		301 54.8	16.3	197 42.9	21.3	39 51.4	21.2	47 43.3	37.8			
06	3 08.3		316 54.8	N14 16.9	212 44.0	N13 20.8	54 54.1	S19 21.2	62 45.9	S20 37.9	Dubhe	194 40.2	N 61 57.9
07	18 10.8		331 54.8	17.6	227 45.1	20.3	69 56.8	21.3	77 48.6	37.9	Elnath	279 02.7	N 28 34.4
08	33 13.3		346 54.8	18.2	242 46.1	19.7	84 59.5	21.4	92 51.2	37.9	Eltanin	91 03.9	N 51 29.7
09	48 15.7		1 54.8	18.9	257 47.2	19.2	100 02.2	21.4	107 53.8	38.0	Enif	34 25.5	N 9 41.8
10	63 18.2		16 54.8	19.6	272 48.3	18.7	115 04.8	21.5	122 56.4	38.0	Fomalhaut	16 07.2	S 29 49.5
11	78 20.7		31 54.9	20.2	287 49.3	18.1	130 07.5	21.6	137 59.1	38.1			
12	93 23.1		46 54.9	N14 20.9	302 50.4	N13 17.6	145 10.2	S19 21.6	153 01.7	S20 38.1	Gacrux	172 44.6	S 56 54.1
13	108 25.6		61 54.9	21.6	317 51.5	17.1	160 12.9	21.7	168 04.3	38.1	Gienah	176 32.8	S 17 19.7
14	123 28.1		76 54.9	22.2	332 52.5	16.5	175 15.6	21.7	183 07.0	38.2	Hadar	149 43.4	S 60 11.4
15	138 30.5		91 54.9	22.9	347 53.6	16.0	190 18.3	21.8	198 09.6	38.2	Hamal	328 45.3	N 23 16.6
16	153 33.0		106 54.9	23.5	2 54.6	15.4	205 21.0	21.9	213 12.2	38.2	Kaus Aust.	84 35.5	S 34 24.1
17	168 35.4		121 54.9	24.2	17 55.7	14.9	220 23.7	21.9	228 14.6	38.3			
18	183 37.9		136 54.9	N14 24.9	32 56.8	N13 14.4	235 26.4	S19 22.0	243 17.5	S20 38.3	Kochab	137 17.6	N 74 19.2
19	198 40.4		151 54.9	25.5	47 57.8	13.8	250 29.1	22.1	258 20.1	38.3	Markab	14 17.4	N 14 59.8
20	213 42.8		166 54.9	26.2	62 58.9	13.3	265 31.8	22.1	273 22.7	38.4	Menkar	314 56.4	N 3 56.2
21	228 45.3		181 54.9	26.8	78 00.0	12.8	280 34.5	22.2	288 25.4	38.4	Menkent	148 53.7	S 36 10.9
22	243 47.8		196 54.9	27.5	93 01.0	12.2	295 37.2	22.3	303 28.0	38.4	Miaplacidus	221 48.6	S 69 33.8
23	258 50.2		211 54.9	28.2	108 02.1	11.7	310 39.9	22.3	318 30.6	38.5			
26													
00	273 52.7		226 54.9	N14 28.8	123 03.2	N13 11.2	325 42.6	S19 22.4	333 33.3	S20 38.5	Mirfak	309 37.0	N 49 43.2
01	288 55.2		241 54.9	29.5	138 04.2	10.6	340 45.3	22.4	348 35.9	38.6	Nunki	76 46.6	S 26 20.6
02	303 57.6		256 54.9	30.1	153 05.3	10.1	355 48.0	22.5	3 38.5	38.6	Peacock	54 20.6	S 56 51.4
03	319 00.1		271 54.9	30.8	168 06.4	09.6	10 50.7	22.6	18 41.1	38.6	Pollux	244 16.1	N 28 07.2
04	334 02.6		286 54.9	31.5	183 07.4	09.0	25 53.4	22.6	33 43.8	38.7	Procyon	245 41.2	N 5 19.4
05	349 05.0		301 54.9	32.1	198 08.5	08.5	40 56.1	22.7	48 46.4	38.7			
06	4 07.5		316 54.9	N14 32.8	213 09.6	N13 08.0	55 58.8	S19 22.8	63 49.0	S20 38.7	Rasalhague	96 42.6	N 12 35.4
07	19 09.9		331 54.9	33.4	228 10.6	07.4	71 01.5	22.8	78 51.7	38.8	Regulus	208 25.5	N 12 09.4
08	34 12.4		346 54.8	34.1	243 11.7	06.9	86 04.2	22.9	93 54.3	38.8	Rigel	281 50.2	S 8 14.8
09	49 14.9		1 54.8	34.7	258 12.8	06.3	101 06.9	23.0	108 56.9	38.8	Rigel Kent.	140 45.0	S 60 40.7
10	64 17.3		16 54.8	35.4	273 13.8	05.8	116 09.6	23.0	123 59.6	38.9	Sabik	102 57.3	S 15 40.6
11	79 19.8		31 54.8	36.1	288 14.9	05.3	131 12.3	23.1	139 02.2	38.9			
12	94 22.3		46 54.8	N14 36.7	303 15.9	N13 04.7	146 15.0	S19 23.2	154 04.8	S20 38.9	Schedar	350 25.4	N 56 19.2
13	109 24.7		61 54.8	37.4	318 17.0	04.2	161 17.7	23.2	169 07.5	39.0	Shaula	97 14.9	S 37 04.5
14	124 27.2		76 54.8	38.0	333 18.1	03.7	176 20.4	23.3	184 10.1	39.0	Sirius	259 08.8	S 16 39.8
15	139 29.7		91 54.8	38.7	348 19.1	03.1	191 23.1	23.3	199 12.7	39.1	Spica	159 12.6	S 10 57.6
16	154 32.1		106 54.8	39.3	3 20.2	02.6	206 25.8	23.4	214 15.4	39.1	Suhail	223 21.7	S 43 16.8
17	169 34.6		121 54.7	40.0	18 21.3	02.0	221 28.5	23.5	229 18.0	39.1			
18	184 37.1		136 54.7	N14 40.7	33 22.3	N13 01.5	236 31.2	S19 23.5	244 20.6	S20 39.2	Vega	81 05.1	N 38 44.9
19	199 39.5		151 54.7	41.3	48 23.4	01.0	251 33.9	23.6	259 23.3	39.2	Zuben'ubi	137 48.8	S 15 52.9
20	214 42.0		166 54.7	42.0	63 24.5	13 00.4	266 36.6	23.7	274 25.9	39.2			
21	229 44.4		181 54.7	42.6	78 25.5	12 59.9	281 39.3	23.7	289 28.5	39.3			
22	244 46.9		196 54.7	43.3	93 26.6	59.3	296 42.0	23.8	304 31.1	39.3	Venus	314 01.1	h 8 52
23	259 49.4		211 54.6	43.9	108 27.7	58.8	311 44.7	23.9	319 33.8	39.3	Mars	209 44.0	h 15 48
											Jupiter	51 44.3	h 2 21
											Saturn	59 36.6	h 1 50
Mer. Pass.	5 47.5		v 0.0	d 0.7	v 1.1	d 0.5	v 2.7	d 0.1	v 2.6	d 0.0			

G.M.T.		SUN		MOON				Lat.	Twilight		Sun-rise	Moonrise										
		G.H.A.	Dec.	G.H.A.	<i>v</i>	Dec.	<i>d</i>		H.P.	Naut.		Civil	24	25	26	27						
d	h	°	'	°	'	°	'	°	'	h	m	h	m	h	m	h	m					
24	00	179	27.5	N 23	25.4	59	43.2	11.9	S	8	07.7	9.9	57.0	N 72	□	□	□	17 01	19 04	21 37	■	
	01	194	27.4		25.3	74	14.1	11.8		8	17.6	9.7	57.0	N 70	□	□	□	16 42	18 31	20 25	22 17	
	02	209	27.3		25.3	88	44.9	11.8		8	27.3	9.8	57.0	68	□	□	□	16 27	18 07	19 48	21 21	
	03	224	27.1	..	25.3	103	15.7	11.7		8	37.1	9.7	57.1	66	□	□	□	16 15	17 49	19 22	20 47	
	04	239	27.0		25.2	117	46.4	11.6		8	46.8	9.7	57.1	64	///	///	01 33	16 05	17 34	19 02	20 23	
	05	254	26.9		25.2	132	17.0	11.6		8	56.5	9.7	57.1	62	///	///	02 11	15 57	17 21	18 46	20 04	
	06	269	26.7	N 23	25.1	146	47.6	11.5	S	9	06.2	9.6	57.2	60	///	00 51	02 37	15 49	17 11	18 32	19 48	
	07	284	26.6		25.1	161	18.1	11.4		9	15.8	9.6	57.2	N 58	///	01 42	02 57	15 43	17 02	18 21	19 35	
	08	299	26.5		25.0	175	48.5	11.4		9	25.4	9.6	57.3	56	///	02 12	03 14	15 37	16 54	18 11	19 23	
	09	314	26.3	..	25.0	190	18.9	11.2		9	35.0	9.5	57.3	54	00 47	02 34	03 29	15 32	16 47	18 02	19 13	
SATURDAY	10	329	26.2		24.9	204	49.1	11.2		9	44.5	9.5	57.3	52	01 34	02 52	03 41	15 28	16 41	17 54	19 04	
	11	344	26.1		24.9	219	19.3	11.2		9	54.0	9.5	57.4	50	02 02	03 07	03 52	15 24	16 35	17 47	18 56	
	12	359	25.9	N 23	24.8	233	49.5	11.0	S	10	03.5	9.4	57.4	45	02 47	03 37	04 14	15 15	16 23	17 32	18 39	
	13	14	25.8		24.8	248	19.5	11.0		10	12.9	9.4	57.4	N 40	03 18	03 59	04 32	15 08	16 13	17 19	18 25	
	14	29	25.7		24.7	262	49.5	10.9		10	22.3	9.3	57.5	35	03 41	04 18	04 47	15 01	16 04	17 09	18 13	
	15	44	25.5	..	24.7	277	19.4	10.8		10	31.6	9.3	57.5	30	03 59	04 33	05 00	14 56	15 57	17 00	18 03	
	16	59	25.4		24.6	291	49.2	10.7		10	40.9	9.3	57.6	20	04 28	04 58	05 22	14 46	15 44	16 44	17 46	
	17	74	25.3		24.6	306	18.9	10.7		10	50.2	9.2	57.6	N 10	04 51	05 18	05 41	14 38	15 32	16 30	17 30	
	18	89	25.1	N 23	24.5	320	48.6	10.6	S	10	59.4	9.1	57.6	0	05 10	05 36	05 59	14 30	15 22	16 17	17 16	
	19	104	25.0		24.5	335	18.2	10.5		11	08.5	9.1	57.7	S 10	05 27	05 53	06 16	14 22	15 11	16 04	17 02	
SUNDAY	20	119	24.9		24.4	349	47.7	10.4		11	17.6	9.1	57.7	20	05 43	06 11	06 35	14 14	15 00	15 51	16 46	
	21	134	24.7	..	24.4	4	17.1	10.3		11	26.7	9.0	57.7	30	06 00	06 30	06 56	14 05	14 47	15 35	16 29	
	22	149	24.6		24.3	18	46.4	10.3		11	35.7	9.0	57.8	35	06 08	06 40	07 08	14 00	14 40	15 26	16 19	
	23	164	24.5		24.3	33	15.7	10.2		11	44.7	8.9	57.8	40	06 18	06 52	07 23	13 54	14 32	15 16	16 07	
						33	15.7	10.2		11	44.7	8.9	57.8	45	06 28	07 06	07 39	13 47	14 22	15 04	15 54	
	25	00	179	24.3	N 23	24.2	47	44.9	10.0	S	11	53.6	8.8	57.9	S 50	06 40	07 21	08 00	13 39	14 11	14 50	15 37
	01	194	24.2		24.1	62	13.9	10.1		12	02.4	8.8	57.9	52	06 45	07 29	08 10	13 35	14 06	14 43	15 30	
	02	209	24.1		24.1	76	43.0	9.9		12	11.2	8.8	57.9	54	06 51	07 37	08 21	13 31	14 00	14 36	15 21	
	03	224	23.9	..	24.0	91	11.9	9.8		12	20.0	8.7	58.0	56	06 57	07 46	08 34	13 26	13 53	14 27	15 11	
	04	239	23.8		24.0	105	40.7	9.8		12	28.7	8.6	58.0	58	07 04	07 57	08 48	13 21	13 46	14 18	15 01	
05	254	23.7		23.9	120	09.5	9.7		12	37.3	8.6	58.1	S 60	07 11	08 08	09 06	13 15	13 38	14 08	14 48		
MONDAY	06	269	23.6	N 23	23.8	134	38.2	9.5	S	12	45.9	8.5	58.1									
	07	284	23.4		23.8	149	06.7	9.5		12	54.4	8.5	58.1	Lat.	Sun-set	Twilight	Moonset					
	08	299	23.3		23.7	163	35.2	9.5		13	02.9	8.4	58.2			Civil	Naut.	24	25	26	27	
	09	314	23.2	..	23.6	178	03.7	9.3		13	11.3	8.3	58.2	°	h m	h m	h m	h m	h m	h m	h m	
	10	329	23.0		23.6	192	32.0	9.2		13	19.6	8.3	58.2	N 72	□	□	□	00 15	00 23	23 15	■	
	11	344	22.9		23.5	207	00.2	9.2		13	27.9	8.2	58.3	N 70	□	□	□	00 27	00 25	00 25	00 27	
	12	359	22.8	N 23	23.5	221	28.4	9.1	S	13	36.1	8.1	58.3	68	□	□	□	00 37	00 42	00 50	01 05	
	13	14	22.6		23.4	235	56.5	9.0		13	44.2	8.1	58.4	66	□	□	□	00 45	00 55	01 09	01 32	
	14	29	22.5		23.3	250	24.5	8.9		13	52.3	8.0	58.4	64	22 32	///	///	00 52	01 06	01 25	01 52	
	15	44	22.4	..	23.2	264	52.4	8.8		14	00.3	7.9	58.4	62	21 54	///	///	00 58	01 15	01 38	02 09	
TUESDAY	16	59	22.2		23.2	279	20.2	8.7		14	08.2	7.8	58.5	60	21 28	23 13	///	01 04	01 23	01 49	02 23	
	17	74	22.1		23.1	293	47.9	8.7		14	16.0	7.8	58.5	N 58	21 07	22 23	///	01 08	01 31	01 59	02 35	
	18	89	22.0	N 23	23.0	308	15.6	8.5	S	14	23.8	7.7	58.5	56	20 51	21 53	///	01 12	01 37	02 07	02 45	
	19	104	21.8		23.0	322	43.1	8.5		14	31.5	7.7	58.6	54	20 36	21 31	23 17	01 16	01 43	02 15	02 55	
	20	119	21.7		22.9	337	10.6	8.4		14	39.2	7.5	58.6	52	20 24	21 13	22 31	01 19	01 48	02 21	03 03	
	21	134	21.6	..	22.8	351	38.0	8.3		14	46.7	7.5	58.7	50	20 13	20 58	22 03	01 23	01 52	02 27	03 10	
	22	149	21.5		22.8	6	05.3	8.2		14	54.2	7.4	58.7	45	19 51	20 28	21 18	01 29	02 02	02 41	03 26	
	23	164	21.3		22.7	20	32.5	8.1		15	01.6	7.3	58.7	N 40	19 33	20 06	20 47	01 35	02 11	02 52	03 39	
	24	179	21.2	N 23	22.6	34	59.6	8.0	S	15	08.9	7.2	58.8	35	19 18	19 47	20 24	01 40	02 18	03 01	03 50	
	25	194	21.1		22.5	49	26.6	8.0		15	16.1	7.2	58.8	30	19 05	19 32	20 06	01 44	02 24	03 09	04 00	
WEDNESDAY	02	209	20.9		22.5	63	53.6	7.9		15	23.3	7.0	58.8	20	18 43	19 07	19 37	01 52	02 35	03 23	04 16	
	03	224	20.8	..	22.4	78	20.5	7.7		15	30.3	7.0	58.9	N 10	18 24	18 47	19 14	01 58	02 45	03 36	04 31	
	04	239	20.7		22.3	92	47.2	7.7		15	37.3	6.9	58.9	0	18 06	18 29	18 55	02 05	02 54	03 48	04 45	
	05	254	20.5		22.2	107	13.9	7.6		15	44.2	6.8	58.9	S 10	17 49	18 12	18 38	02 11	03 04	04 00	04 58	
	06	269	20.4	N 23	22.1	121	40.5	7.5	S	15	51.0	6.7	59.0	20	17 30	17 54	18 22	02 18	03 14	04 12	05 13	
	07	284	20.3		22.1	136	07.0	7.5		15	57.7	6.7	59.0	30	17 09	17 35	18 05	02 25	03 25	04 27	05 30	
	08	299	20.1		22.0	150	33.5	7.3		16	04.4	6.5	59.0	35	16 57	17 25						

G.M.T.	ARIES			VENUS -3.9			MARS +1.8			JUPITER -2.3			SATURN +0.4			STARS		
	G.H.A.	G.H.A.	Dec.	G.H.A.	G.H.A.	Dec.	G.H.A.	G.H.A.	Dec.	G.H.A.	G.H.A.	Dec.	G.H.A.	G.H.A.	Dec.	Name	S.H.A.	Dec.
d h																		
27 00	274 51.8	226 54.6	N14 44.6	123 28.7	N12 58.3	326 47.4	S19 23.9	334 36.4	S20 39.4	Acamar	315 48.5	S 40 27.4						
01	289 54.3	241 54.6	45.3	138 29.8	57.7	341 50.1	24.0	349 39.0	39.4	Achernar	335 56.3	S 57 25.7						
02	304 56.8	256 54.6	45.9	153 30.9	57.2	356 52.8	24.1	4 41.7	39.5	Acrux	173 53.2	S 62 53.4						
03	319 59.2	271 54.5	46.6	168 31.9	56.6	11 55.5	24.1	19 44.3	39.5	Adhara	255 43.8	S 28 55.2						
04	335 01.7	286 54.5	47.2	183 33.0	56.1	26 58.2	24.2	34 46.9	39.5	Aldebaran	291 34.8	N 16 25.8						
05	350 04.2	301 54.5	47.9	198 34.1	55.6	42 00.9	24.3	49 49.6	39.6									
06	5 06.6	316 54.5	N14 48.5	213 35.1	N12 55.0	57 03.6	S19 24.3	64 52.2	S20 39.6	Alioth	166 55.1	N 56 10.5						
07	20 09.1	331 54.4	49.2	228 36.2	54.5	72 06.3	24.4	79 54.8	39.6	Alkaid	153 29.7	N 49 30.7						
08	35 11.5	346 54.4	49.8	243 37.2	53.9	87 09.0	24.5	94 57.5	39.7	Al Na'ir	28 32.8	S 47 08.7						
09	50 14.0	1 54.4	50.5	258 38.3	53.4	102 11.7	24.5	110 00.1	39.7	Alnilam	276 26.6	S 1 13.6						
10	65 16.5	16 54.4	51.2	273 39.4	52.9	117 14.4	24.6	125 02.7	39.7	Alphard	218 34.9	S 8 29.5						
11	80 18.9	31 54.3	51.8	288 40.4	52.3	132 17.1	24.7	140 05.4	39.8									
12	95 21.4	46 54.3	N14 52.5	303 41.5	N12 51.8	147 19.8	S19 24.7	155 08.0	S20 39.8	Alphecca	126 44.0	N 26 50.9						
13	110 23.9	61 54.3	53.1	318 42.6	51.2	162 22.5	24.8	170 10.6	39.8	Alpheratz	358 24.1	N 28 52.0						
14	125 26.3	76 54.2	53.8	333 43.6	50.7	177 25.2	24.9	185 13.3	39.9	Altair	62 46.2	N 8 46.5						
15	140 28.8	91 54.2	54.4	348 44.7	50.2	192 27.9	24.9	200 15.9	39.9	Ankaa	353 54.5	S 42 30.7						
16	155 31.3	106 54.2	55.1	3 45.8	49.6	207 30.6	25.0	215 18.5	40.0	Antares	113 14.2	S 26 20.8						
17	170 33.7	121 54.1	55.7	18 46.8	49.1	222 33.4	25.1	230 21.2	40.0									
18	185 36.2	136 54.1	N14 56.4	33 47.9	N12 48.5	237 36.1	S19 25.1	245 23.8	S20 40.0	Arcturus	146 31.4	N 19 23.2						
19	200 38.7	151 54.1	57.0	48 49.0	48.0	252 38.8	25.2	260 26.4	40.1	Atria	108 50.7	S 68 57.5						
20	215 41.1	166 54.0	57.7	63 50.0	47.4	267 41.5	25.2	275 29.1	40.1	Avior	234 34.6	S 59 23.3						
21	230 43.6	181 54.0	58.4	78 51.1	46.9	282 44.2	25.3	290 31.7	40.1	Bellatrix	279 14.5	N 6 18.8						
22	245 46.0	196 54.0	59.0	93 52.2	46.4	297 46.9	25.4	305 34.3	40.2	Betelgeuse	271 44.2	N 7 23.9						
23	260 48.5	211 53.9	14 59.7	108 53.2	45.8	312 49.6	25.4	320 37.0	40.2									
28 00	275 51.0	226 53.9	N15 00.3	123 54.3	N12 45.3	327 52.3	S19 25.5	335 39.6	S20 40.2	Canopus	264 14.2	S 52 40.6						
01	290 53.4	241 53.8	01.0	138 55.3	44.7	342 55.0	25.6	350 42.2	40.3	Capella	281 33.0	N 45 57.4						
02	305 55.9	256 53.8	01.6	153 56.4	44.2	357 57.7	25.6	5 44.9	40.3	Deneb	49 57.8	N 45 08.5						
03	320 58.4	271 53.8	02.3	168 57.5	43.6	13 00.4	25.7	20 47.5	40.4	Denebola	183 13.8	N 14 47.4						
04	336 00.8	286 53.7	02.9	183 58.5	43.1	28 03.1	25.8	35 50.1	40.4	Diphda	349 35.3	S 18 11.8						
05	351 03.3	301 53.7	03.6	198 59.6	42.6	43 05.9	25.8	50 52.8	40.4									
06	6 05.8	316 53.6	N15 04.2	214 00.7	N12 42.0	58 08.6	S19 25.9	65 55.4	S20 40.5	Dubhe	194 40.2	N 61 57.9						
07	21 08.2	331 53.6	04.9	229 01.7	41.5	73 11.3	26.0	80 58.1	40.5	Elnath	279 02.7	N 28 34.4						
08	36 10.7	346 53.5	05.5	244 02.8	40.9	88 14.0	26.0	96 00.7	40.5	Eltanin	91 03.9	N 51 29.8						
09	51 13.2	1 53.5	06.2	259 03.9	40.4	103 16.7	26.1	111 03.3	40.6	Enif	34 25.5	N 9 41.9						
10	66 15.6	16 53.4	06.8	274 04.9	39.8	118 19.4	26.2	126 06.0	40.6	Fomalhaut	16 07.2	S 29 49.4						
11	81 18.1	31 53.4	07.5	289 06.0	39.3	133 22.1	26.2	141 08.6	40.6									
12	96 20.5	46 53.3	N15 08.1	304 07.1	N12 38.8	148 24.8	S19 26.3	156 11.2	S20 40.7	Gacrux	172 44.6	S 56 54.1						
13	111 23.0	61 53.3	08.8	319 08.1	38.2	163 27.5	26.4	171 13.9	40.7	Gienah	176 32.8	S 17 19.7						
14	126 25.5	76 53.2	09.4	334 09.2	37.7	178 30.3	26.4	186 16.5	40.8	Hadar	149 43.4	S 60 11.4						
15	141 27.9	91 53.2	10.1	349 10.3	37.1	193 33.0	26.5	201 19.1	40.8	Hamal	328 45.3	N 23 16.6						
16	156 30.4	106 53.1	10.7	4 11.3	36.6	208 35.7	26.6	216 21.8	40.8	Kaus Aust.	84 35.5	S 34 24.1						
17	171 32.9	121 53.1	11.4	19 12.4	36.0	223 38.4	26.7	231 24.4	40.9									
18	186 35.3	136 53.0	N15 12.0	34 13.5	N12 35.5	238 41.1	S19 26.7	246 27.0	S20 40.9	Kochab	137 17.7	N 74 19.2						
19	201 37.8	151 53.0	12.7	49 14.5	34.9	253 43.8	26.8	261 29.7	40.9	Markab	14 17.4	N 14 59.8						
20	216 40.3	166 52.9	13.3	64 15.6	34.4	268 46.5	26.9	276 32.3	41.0	Menkar	314 56.4	N 3 56.2						
21	231 42.7	181 52.9	14.0	79 16.6	33.8	283 49.2	26.9	291 35.0	41.0	Menkent	148 53.8	S 36 10.9						
22	246 45.2	196 52.8	14.6	94 17.7	33.3	298 52.0	27.0	306 37.6	41.1	Miaplacidus	221 48.6	S 69 33.8						
23	261 47.7	211 52.7	15.3	109 18.8	32.8	313 54.7	27.1	321 40.2	41.1									
29 00	276 50.1	226 52.7	N15 15.9	124 19.8	N12 32.2	328 57.4	S19 27.1	336 42.9	S20 41.1	Mirfak	309 37.0	N 49 43.2						
01	291 52.6	241 52.6	16.6	139 20.9	31.7	344 00.1	27.2	351 45.5	41.2	Nunki	76 46.6	S 26 20.6						
02	306 55.0	256 52.6	17.2	154 22.0	31.1	359 02.8	27.3	6 48.1	41.2	Peacock	54 20.6	S 56 51.4						
03	321 57.5	271 52.5	17.9	169 23.0	30.6	14 05.5	27.3	21 50.8	41.2	Pollux	244 16.1	N 28 07.2						
04	337 00.0	286 52.4	18.5	184 24.1	30.0	29 08.2	27.4	36 53.4	41.3	Procyon	245 41.2	N 5 19.4						
05	352 02.4	301 52.4	19.2	199 25.2	29.5	44 11.0	27.5	51 56.0	41.3									
06	7 04.9	316 52.3	N15 19.8	214 26.2	N12 28.9	59 13.7	S19 27.5	66 58.7	S20 41.4	Rasalhague	96 42.6	N 12 35.4						
07	22 07.4	331 52.3	20.5	229 27.3	28.4	74 16.4	27.6	82 01.3	41.4	Regulus	208 25.5	N 12 09.4						
08	37 09.8	346 52.2	21.1	244 28.4	27.8	89 19.1	27.7	97 04.0	41.4	Rigel	281 50.2	S 8 14.8						
09	52 12.3	1 52.1	21.7	259 29.4	27.3	104 21.8	27.7	112 06.6	41.5	Rigel Kent.	140 45.0	S 60 40.7						
10	67 14.8	16 52.1	22.4	274 30.5	26.7	119 24.5	27.8	127 09.2	41.5	Sabik	102 57.3	S 15 40.6						
11	82 17.2	31 52.0	23.0	289 31.6	26.2	134 27.3	27.9	142 11.9	41.5									
12	97 19.7	46 51.9	N15 23.7	304 32.6	N12 25.6	149 30.0	S19 27.9	157 14.5	S20 41.6	Schedar	350 25.3	N 56 19.2						
13	112 22.2	61 51.9	24.3	319 33.7	25.1	164 32.7	28.0	172 17.1	41.6	Shaula	97 14.9	S 37 04.5						
14	127 24.6	76 51.8	25.0	334 34.8	24.5	179 35.4	28.1	187 19.8	41.6	Sirius	259 08.7	S 16 39.8						
15	142 27.1	91 51.7	25.6	349 35.8	24.0	194 38.1	28.1	202 22.4	41.7	Spica	159 12.6	S 10 57.6						
16	157 29.5	106 51.7	26.3	4 36.9	23.4	209 40.8	28.2	217 25.1	41.7	Suhail	223 21.7	S 43 16.8						
17	172 32.0	121 51.6	26.9	19 37.9	22.9	224 43.6	28.3	232 27.7	41.8									
18	187 34.5	136 51.5	N15 27.6	34 39.0	N12 22.4	239 46.3	S19 28.4	247 30.3	S20 41.8	Vega	81 05.1	N 38 44.9						
19	202 36.9	151 51.4	28.2	49 40.1	21.8	254 49.0	28.4	262 33.0	41.8	Zuben'ubi	137 48.8	S 15 52.9						
20	217 39.4	166 51.4	28.8	64 41.1	21.3	269 51.7	28.5	277 35.6	41.9									
21	232 41.9	181 51.3	29.5	79 42.2	20.7	284 54.4	28.6	292 38.2	41.9									
22	247 44.3	196 51.2	30.1	94 43.3	20.2	299 57.2												

G.M.T.		SUN		MOON				Lat.	Twilight		Sun-rise	Moonrise							
		G.H.A.	Dec.	G.H.A.	<i>v</i>	Dec.	<i>d</i>		H.P.	Naut.		Civil	27	28	29	30			
d	h	°	'	°	'	°	'	°	'	°	'	h	m	h	m	h	m	h	m
TUESDAY	27	00	179 18.1	N 23 20.6	21 25.2	6.1	S 17 36.9	4.9	59.6	N 72	□	□	□	■	■	■	■		
	01	194 17.9	20.5	35 50.3	6.0	17 41.8	4.8	59.6	N 70	□	□	□	22 17	23 28	23 45	23 49			
	02	209 17.8	20.4	50 15.3	5.9	17 46.6	4.7	59.6	68	□	□	□	21 21	22 28	23 05	23 23			
	03	224 17.7	20.3	64 40.2	5.9	17 51.3	4.5	59.7	66	□	□	□	20 47	21 54	22 37	23 03			
	04	239 17.5	20.2	79 05.1	5.7	17 55.8	4.5	59.7	64			01 36	20 23	21 28	22 15	22 46			
	05	254 17.4	20.1	93 29.8	5.7	18 00.3	4.3	59.7	62			02 13	20 04	21 09	21 58	22 33			
	06	269 17.3	N 23 20.0	107 54.5	5.7	S 18 04.6	4.2	59.8	60		00 56	02 39	19 48	20 53	21 44	22 21			
	07	284 17.2	20.0	122 19.2	5.5	18 08.8	4.0	59.8	N 58		01 44	02 59	19 35	20 39	21 31	22 11			
	08	299 17.0	19.9	136 43.7	5.5	18 12.8	4.0	59.8	56		02 14	03 16	19 23	20 27	21 20	22 03			
	09	314 16.9	19.8	151 08.2	5.5	18 16.8	3.8	59.8	54	00 52	02 36	03 30	19 13	20 17	21 11	21 55			
	10	329 16.8	19.7	165 32.7	5.3	18 20.6	3.8	59.9	52	01 36	02 54	03 42	19 04	20 08	21 03	21 48			
	11	344 16.6	19.6	179 57.0	5.3	18 24.4	3.6	59.9	50	02 03	03 09	03 53	18 56	20 00	20 55	21 41			
	12	359 16.5	N 23 19.5	194 21.3	5.3	S 18 28.0	3.4	59.9	45	02 48	03 38	04 15	18 39	19 42	20 39	21 28			
	13	14 16.4	19.4	208 45.6	5.2	18 31.4	3.4	60.0	N 40	03 19	04 00	04 33	18 25	19 28	20 26	21 17			
	14	29 16.2	19.3	223 09.8	5.1	18 34.8	3.2	60.0	35	03 42	04 19	04 48	18 13	19 16	20 14	21 07			
	15	44 16.1	19.2	237 33.9	5.0	18 38.0	3.1	60.0	30	04 00	04 34	05 01	18 03	19 06	20 05	20 59			
	16	59 16.0	19.0	251 57.9	5.0	18 41.1	3.0	60.0	20	04 29	04 59	05 23	17 46	18 48	19 47	20 44			
	17	74 15.9	18.9	266 21.9	5.0	18 44.1	2.8	60.1	N 10	04 52	05 19	05 42	17 30	18 32	19 33	20 31			
	18	89 15.7	N 23 18.8	280 45.9	4.9	S 18 46.9	2.7	60.1	0	05 11	05 37	05 59	17 16	18 17	19 19	20 19			
	19	104 15.6	18.7	295 09.8	4.8	18 49.6	2.6	60.1	S 10	05 28	05 54	06 17	17 02	18 02	19 05	20 07			
	20	119 15.5	18.6	309 33.6	4.8	18 52.2	2.4	60.1	20	05 44	06 11	06 35	16 46	17 46	18 50	19 54			
	21	134 15.4	18.5	323 57.4	4.7	18 54.6	2.3	60.2	30	06 00	06 30	06 56	16 29	17 28	18 32	19 39			
	22	149 15.2	18.4	338 21.1	4.7	18 56.9	2.2	60.2	35	06 09	06 41	07 09	16 19	17 18	18 23	19 31			
	23	164 15.1	18.3	352 44.8	4.7	18 59.1	2.1	60.2	40	06 18	06 52	07 23	16 07	17 06	18 11	19 21			
24								45	06 28	07 06	07 39	15 54	16 52	17 58	19 09				
WEDNESDAY	28	00	179 15.0	N 23 18.2	7 08.5	4.6	S 19 01.2	1.9	60.2	S 50	06 40	07 21	08 00	15 37	16 35	17 42	18 55		
	01	194 14.8	18.1	21 32.1	4.5	19 03.1	1.8	60.3	52	06 45	07 29	08 10	15 30	16 27	17 34	18 49			
	02	209 14.7	18.0	35 55.6	4.5	19 04.9	1.6	60.3	54	06 51	07 37	08 21	15 21	16 17	17 25	18 42			
	03	224 14.6	17.9	50 19.1	4.5	19 06.5	1.6	60.3	56	06 57	07 46	08 33	15 11	16 07	17 16	18 33			
	04	239 14.5	17.8	64 42.6	4.4	19 08.1	1.3	60.3	58	07 04	07 56	08 48	15 01	15 56	17 05	18 24			
	05	254 14.3	17.6	79 06.0	4.4	19 09.4	1.3	60.3	S 60	07 11	08 08	09 05	14 48	15 43	16 52	18 14			
	06	269 14.2	N 23 17.5	93 29.4	4.4	S 19 10.7	1.1	60.4											
	07	284 14.1	17.4	107 52.8	4.3	19 11.8	1.0	60.4	Lat.	Sun-set	Twilight								
	08	299 13.9	17.3	122 16.1	4.3	19 12.8	0.8	60.4	Civil	Naut.									
	09	314 13.8	17.2	136 39.4	4.2	19 13.6	0.7	60.4											
	10	329 13.7	17.1	151 02.6	4.2	19 14.3	0.5	60.4											
	11	344 13.6	17.0	165 25.8	4.2	19 14.8	0.5	60.5											
	12	359 13.4	N 23 16.8	179 49.0	4.2	S 19 15.3	0.2	60.5	N 72	h m	h m	h m	h m	h m	h m	h m	h m		
	13	14 13.3	16.7	194 12.2	4.2	19 15.5	0.2	60.5	N 70	□	□	□	00 27	00 40	01 38	03 29			
	14	29 13.2	16.6	208 35.4	4.1	19 15.7	0.0	60.5	68	□	□	□	01 05	01 36	02 37	04 09			
	15	44 13.1	16.5	222 58.5	4.1	19 15.7	0.2	60.5	66	□	□	□	01 32	02 10	03 11	04 36			
	16	59 12.9	16.4	237 21.6	4.1	19 15.5	0.2	60.6	64	22 29			01 52	02 34	03 36	04 58			
	17	74 12.8	16.2	251 44.7	4.0	19 15.3	0.5	60.6	62	21 53			02 09	02 54	03 56	05 14			
	18	89 12.7	N 23 16.1	266 07.7	4.1	S 19 14.8	0.5	60.6	60	21 27	23 09		02 23	03 10	04 12	05 28			
	19	104 12.6	16.0	280 30.8	4.0	19 14.3	0.7	60.6	N 58	21 07	22 21		02 35	03 23	04 25	05 40			
	20	119 12.4	15.9	294 53.8	4.0	19 13.6	0.9	60.6	56	20 50	21 52		02 45	03 35	04 37	05 51			
	21	134 12.3	15.8	309 16.8	4.1	19 12.7	1.0	60.6	54	20 36	21 30	23 13	02 55	03 45	04 47	06 00			
	22	149 12.2	15.6	323 39.9	4.0	19 11.7	1.1	60.6	52	20 24	21 12	22 29	03 03	03 54	04 56	06 08			
	23	164 12.1	15.5	338 02.9	4.0	19 10.6	1.3	60.7	50	20 13	20 57	22 02	03 10	04 02	05 05	06 15			
24								45	19 51	20 28	21 18	03 26	04 20	05 22	06 31				
THURSDAY	29	00	179 11.9	N 23 15.4	352 25.9	4.0	S 19 09.3	1.4	60.7	N 40	19 33	20 06	20 47	03 39	04 34	05 36	06 44		
	01	194 11.8	15.3	6 48.9	3.9	19 07.9	1.5	60.7	35	19 18	19 48	20 24	03 50	04 46	05 48	06 55			
	02	209 11.7	15.1	21 11.8	4.0	19 06.4	1.7	60.7	30	19 05	19 32	20 06	04 00	04 56	05 58	07 04			
	03	224 11.6	15.0	35 34.8	4.0	19 04.7	1.8	60.7	20	18 43	19 08	19 37	04 16	05 14	06 16	07 20			
	04	239 11.4	14.9	49 57.8	4.0	19 02.9	2.0	60.7	N 10	18 24	18 47	19 14	04 31	05 30	06 32	07 34			
	05	254 11.3	14.7	64 20.8	4.0	19 00.9	2.1	60.7	0	18 07	18 29	18 55	04 45	05 45	06 46	07 48			
	06	269 11.2	N 23 14.6	78 43.8	4.0	S 18 58.8	2.2	60.7	S 10	17 50	18 12	18 39	04 58	05 59	07 01	08 01			
	07	284 11.0	14.5	93 06.8	4.0	18 56.6	2.4	60.7	20	17 31	17 55	18 23	05 13	06 15	07 16	08 15			
	08	299 10.9	14.4	107 29.8	4.1	18 54.2	2.6	60.7	30	17 10	17 36	18 06	05 30	06 33	07 34	08 31			
	09	314 10.8	14.2	121 52.9	4.0	18 51.6	2.6	60.8	35	16 58	17 26	17 58	05 39	06 43	07 44	08 40			
	10	329 10.7	14.1	136 15.9	4.0	18 49.0	2.8	60.8	40	16 44	17 14	17 48	05 51	06 55	07 56	08 50			
	11	344 10.5	14.0	150 38.9	4.1	18 46.2	3.0	60.8	45	16 27	17 01	17 38	06 04	07 09	08 09	09 02			
	12	359 10.4	N 23 13.8	165 02.0	4.1	S 18 43.2	3.0	60.8	S 50	16 06	16 45	17 26	06 20	07 26	08 26	09 17			
	13	14 10.3	13.7	179 25.1	4.1	18 40.2	3.3	60.8	52	15 57	16 37	17 21	06 27	07 34	08 34	09 24			
	14	29 10.2	13.5	193 48.2	4.1	18 36.9	3.3	60.8	54	15 46	16 29	17 15	06 35	07 43	08 43	09 31			
	15	44 10.0	13.4	208 11.3	4.1	18 33.6	3.5	60.8	56	15 33	16 20	17 09	06 45	07 54	08 52	09 40			
	16	59 09.9	13.3	222 34.4	4.1	18 30.1	3.6	60.8	58	15 19	16 10	17 03	06 56	08 05	09 03	09 50			
	17	74 09.8	13.1	236 57.5	4.2	18 26.5	3.8	60.8	S 60	15 01	15 59	16 55	07 08	08 18	09 16	10 01			
	18	89 09.7	N 23 13.0	251 20.7	4.2	S 18 22.7	3.9	60.8											
	19	104 09.6	12.9	265 43.9	4.3	18 18.8	4.0	60.8	Day	SUN									
	20	119 09.4	12.7	280 07.2	4.2	18 14.8	4.2	60.8	Eqn. of Time										
	21	134 09.3	12.6	294 30.4	4.3	18 10.6	4.2	60.8	00h	12h	Mer. Pass.								
	22	149 09.2	12.4	308 53.7	4.3	18 06.4	4.5	60.8											
	23	164 09.1	12.3	323 17.0	4.4	18 01.9	4.5	60.8											
24																			
		S.D. 15.8	<i>d</i> 0.1	S.D. 16.3	16.5	16.6													

G.M.T.	ARIES		VENUS -3.8		MARS +1.8		JUPITER -2.3		SATURN +0.4		STARS		
	G.H.A.		G.H.A. Dec.		G.H.A. Dec.		G.H.A. Dec.		G.H.A. Dec.		Name	S.H.A.	Dec.
	d h	° ' "	° ' "	° ' "	° ' "	° ' "	° ' "	° ' "	° ' "	° ' "	° ' "	° ' "	° ' "
F R I D A Y	30 00	277 49.3	226 51.1 N15 31.4	124 45.4 N12 19.1	330 02.6 S19 28.8	337 46.2 S20 42.0	Acamar	315 48.4	S 40 27.4				
	01	292 51.7	241 51.0 32.1	139 46.5 18.5	345 05.3 28.8	352 48.8 42.1	Achernar	335 56.2	S 57 25.7				
	02	307 54.2	256 50.9 32.7	154 47.5 18.0	0 08.0 28.9	7 51.4 42.1	Acrux	173 53.2	S 62 53.4				
	03	322 56.7	271 50.8 .. 33.3	169 48.6 .. 17.4	15 10.8 .. 29.0	22 54.1 .. 42.1	Adhara	255 43.8	S 28 55.2				
	04	337 59.1	286 50.7 34.0	184 49.7 16.9	30 13.5 29.0	37 56.7 42.2	Aldebaran	291 34.8	N 16 25.8				
	05	353 01.6	301 50.7 34.6	199 50.7 16.3	45 16.2 29.1	52 59.3 42.2							
	06	8 04.0	316 50.6 N15 35.3	214 51.8 N12 15.8	60 18.9 S19 29.2	68 02.0 S20 42.2	Alioth	166 55.2	N 56 10.5				
	07	23 06.5	331 50.5 35.9	229 52.8 15.2	75 21.7 29.2	83 04.6 42.3	Alkaid	153 29.7	N 49 30.7				
	08	38 09.0	346 50.4 36.6	244 53.9 14.7	90 24.4 29.3	98 07.3 42.3	Al Na'ir	28 32.8	S 47 08.7				
	09	53 11.4	1 50.3 .. 37.2	259 55.0 .. 14.1	105 27.1 .. 29.4	113 09.9 .. 42.3	Alnilam	276 26.6	S 1 13.6				
	10	68 13.9	16 50.3 37.8	274 56.0 13.5	120 29.8 29.5	128 12.5 42.4	Alphard	218 34.9	S 8 29.5				
	11	83 16.4	31 50.2 38.5	289 57.1 13.0	135 32.5 29.5	143 15.2 42.4							
	12	98 18.8	46 50.1 N15 39.1	304 58.2 N12 12.4	150 35.3 S19 29.6	158 17.8 S20 42.5	Alphecca	126 44.1	N 26 50.9				
	13	113 21.3	61 50.0 39.8	319 59.2 11.9	165 38.0 29.7	173 20.5 42.5	Alpheratz	358 24.1	N 28 52.5				
	14	128 23.8	76 49.9 40.4	335 00.3 11.3	180 40.7 29.7	188 23.1 42.5	Altair	62 46.2	N 8 46.0				
	15	143 26.2	91 49.8 .. 41.0	350 01.4 .. 10.8	195 43.4 .. 29.8	203 25.7 .. 42.6	Ankaa	353 54.5	S 42 30.7				
	16	158 28.7	106 49.7 41.7	5 02.4 10.2	210 46.2 29.9	218 28.4 42.6	Antares	113 14.2	S 26 20.8				
	17	173 31.1	121 49.6 42.3	20 03.5 09.7	225 48.9 29.9	233 31.0 42.6							
	18	188 33.6	136 49.6 N15 43.0	35 04.6 N12 09.1	240 51.6 S19 30.0	248 33.7 S20 42.7	Arcturus	146 31.5	N 19 23.2				
	19	203 36.1	151 49.5 43.6	50 05.6 08.6	255 54.3 30.1	263 36.3 42.7	Atria	108 50.8	S 68 57.6				
	20	218 38.5	166 49.4 44.2	65 06.7 08.0	270 57.1 30.2	278 38.9 42.8	Avior	234 34.6	S 59 23.3				
	21	233 41.0	181 49.3 .. 44.9	80 07.8 .. 07.5	285 59.8 .. 30.2	293 41.6 .. 42.8	Bellatrix	279 14.5	N 6 18.8				
	22	248 43.5	196 49.2 45.5	95 08.8 06.9	301 02.5 30.3	308 44.2 42.8	Betelgeuse	271 44.2	N 7 23.9				
	23	263 45.9	211 49.1 46.1	110 09.9 06.4	316 05.2 30.4	323 46.9 42.9							
S A T U R D A Y	I 00	278 48.4	226 49.0 N15 46.8	125 10.9 N12 05.8	331 08.0 S19 30.4	338 49.5 S20 42.9	Canopus	264 14.2	S 52 40.5				
	01	293 50.9	241 48.9 47.4	140 12.0 05.3	346 10.7 30.5	353 52.1 42.9	Capella	281 33.0	N 45 57.4				
	02	308 53.3	256 48.8 48.1	155 13.1 04.7	1 13.4 30.6	8 54.8 43.0	Deneb	49 57.8	N 45 08.5				
	03	323 55.8	271 48.7 .. 48.7	170 14.1 .. 04.2	16 16.1 .. 30.6	23 57.4 .. 43.0	Denebola	183 13.8	N 14 47.4				
	04	338 58.3	286 48.6 49.3	185 15.2 03.6	31 18.9 30.7	39 00.1 43.1	Diphda	349 35.3	S 18 11.8				
	05	354 00.7	301 48.5 50.0	200 16.3 03.1	46 21.6 30.8	54 02.7 43.1							
	06	9 03.2	316 48.4 N15 50.6	215 17.3 N12 02.5	61 24.3 S19 30.9	69 05.3 S20 43.1	Dubhe	194 40.2	N 61 57.9				
	07	24 05.6	331 48.3 51.2	230 18.4 01.9	76 27.0 30.9	84 08.0 43.2	Elnath	279 02.7	N 28 34.4				
	08	39 08.1	346 48.2 51.9	245 19.5 01.4	91 29.8 31.0	99 10.6 43.2	Eltanin	91 03.9	N 51 29.8				
	09	54 10.6	1 48.1 .. 52.5	260 20.5 .. 00.8	106 32.5 .. 31.1	114 13.3 .. 43.2	Elif	34 25.5	N 9 41.9				
	10	69 13.0	16 48.0 53.1	275 21.6 12 00.3	121 35.2 31.1	129 15.9 43.3	Fomalhaut	16 07.2	S 29 49.4				
	11	84 15.5	31 47.9 53.8	290 22.7 11 59.7	136 38.0 31.2	144 18.6 43.3							
	12	99 18.0	46 47.8 N15 54.4	305 23.7 N11 59.2	151 40.7 S19 31.3	159 21.2 S20 43.4	Gacrux	172 44.7	S 56 54.1				
	13	114 20.4	61 47.7 55.0	320 24.8 58.6	166 43.4 31.3	174 23.8 43.4	Gienah	176 32.8	S 17 19.7				
	14	129 22.9	76 47.6 55.7	335 25.8 58.1	181 46.1 31.4	189 26.5 43.4	Hadar	149 43.4	S 60 11.4				
	15	144 25.4	91 47.5 .. 56.3	350 26.9 .. 57.5	196 48.9 .. 31.5	204 29.1 .. 43.5	Hamal	328 45.3	N 23 16.6				
	16	159 27.8	106 47.4 57.0	5 28.0 57.0	211 51.6 31.6	219 31.8 43.5	Kaus Aust.	84 35.5	S 34 24.1				
	17	174 30.3	121 47.3 57.6	20 29.0 56.4	226 54.3 31.6	234 34.4 43.5							
	18	189 32.8	136 47.1 N15 58.2	35 30.1 N11 55.8	241 57.1 S19 31.7	249 37.0 S20 43.6	Kochab	137 17.7	N 74 19.2				
	19	204 35.2	151 47.0 58.9	50 31.2 55.3	256 59.8 31.8	264 39.7 43.6	Markab	14 17.3	N 14 59.8				
	20	219 37.7	166 46.9 59.5	65 32.2 54.7	272 02.5 31.8	279 42.3 43.7	Menkar	314 56.4	N 3 56.2				
	21	234 40.1	181 46.8 60.1	80 33.3 .. 54.2	287 05.3 .. 31.9	294 45.0 .. 43.7	Menkent	148 53.8	S 36 10.9				
	22	249 42.6	196 46.7 60.7	95 34.4 53.6	302 08.0 32.0	309 47.6 43.7	Miaplacidus	221 48.7	S 69 33.7				
	23	264 45.1	211 46.6 61.4	110 35.4 53.1	317 10.7 32.1	324 50.2 43.8							
S U N D A Y	2 00	279 47.5	226 46.5 N16 02.0	125 36.5 N11 52.5	332 13.4 S19 32.1	339 52.9 S20 43.8	Mirfak	309 37.0	N 49 43.2				
	01	294 50.0	241 46.4 02.6	140 37.6 52.0	347 16.2 32.2	354 55.5 43.8	Nunki	76 46.6	S 26 20.6				
	02	309 52.5	256 46.2 03.3	155 38.6 51.4	2 18.9 32.3	9 58.2 43.9	Peacock	54 20.6	S 56 51.4				
	03	324 54.9	271 46.1 .. 03.9	170 39.7 .. 50.8	17 21.6 .. 32.3	25 00.8 .. 43.9	Pollux	244 16.1	N 28 07.2				
	04	339 57.4	286 46.0 04.5	185 40.7 50.3	32 24.4 32.4	40 03.5 44.0	Procyon	245 41.2	N 5 19.4				
	05	354 59.9	301 45.9 05.2	200 41.8 49.7	47 27.1 32.5	55 06.1 44.0							
	06	10 04.3	316 45.8 N16 05.8	215 42.9 N11 49.2	62 29.8 S19 32.6	70 08.7 S20 44.0	Rasalhague	96 42.6	N 12 35.4				
	07	25 04.8	331 45.7 06.4	230 43.9 48.6	77 32.6 32.6	85 11.4 44.1	Regulus	208 25.5	N 12 09.4				
	08	40 07.3	346 45.5 07.1	245 45.0 48.1	92 35.3 32.7	100 14.0 44.1	Rigel	281 50.2	S 8 14.8				
	09	55 09.7	1 45.4 .. 07.7	260 46.1 .. 47.5	107 38.0 .. 32.8	115 16.7 .. 44.1	Rigel Kent.	140 45.1	S 60 40.7				
	10	70 12.2	16 45.3 08.3	275 47.1 46.9	122 40.8 32.8	130 19.3 44.2	Sabik	102 57.3	S 15 40.6				
	11	85 14.6	31 45.2 08.9	290 48.2 46.4	137 43.5 32.9	145 22.0 44.2							
	12	100 17.1	46 45.0 N16 09.6	305 49.3 N11 45.8	152 46.2 S19 33.0	160 24.6 S20 44.3	Schedar	350 25.3	N 56 19.2				
	13	115 19.6	61 44.9 10.2	320 50.3 45.3	167 49.0 33.1	175 27.2 44.3	Shaula	97 14.9	S 37 04.5				
	14	130 22.0	76 44.8 10.8	335 51.4 44.7	182 51.7 33.1	190 29.9 44.3	Sirius	259 08.7	S 16 39.8				
	15	145 24.5	91 44.7 .. 11.4	350 52.5 .. 44.1	197 54.4 .. 33.2	205 32.5 .. 44.4	Spica	159 12.6	S 10 57.6				
	16	160 27.0	106 44.5 12.1	5 53.5 43.6	212 57.2 33.3	220 35.2 44.4	Suhail	223 21.7	S 43 16.8				
	17	175 29.4	121 44.4 12.7	20 54.6 43.0	227 59.9 33.3	235 37.8 44.4							
	18	190 31.9	136 44.3 N16 13.3	35 55.7 N11 42.5	243 02.6 S19 33.4	250 40.5 S20 44.5	Vega	81 05.1	N 38 45.0				
	19	205 34.4	151 44.2 13.9	50 56.7 41.9	258 05.4 33.5	265 43.1 44.5	Zuben'ubi	137 48.8	S 15 52.9				
	20	220 36.8	166 44.0 14.6	65 57.8 41.4	273 08.1 33.6	280 45.7 44.6							
	21	235 39.3	181 43.9 .. 15.2	80 58.8 .. 40.8	288 10.8 .. 33.6	295 48.4 .. 44.6							
	22	250 41.7	196 43.8 15.8	95 59.9 40.2	303 13.6 33.7	310 51.0 44.6	Venus	308 00.6	h 8 53				
	23	265 44.2	211 43.7 16.4	111 01.0 39.7	318 16.3 33.8	325 53.7 44.7	Mars	206 22.5	15 38				
Mer. Pass. h 5 m 23.9											Jupiter	52 19.6	1 55
v -0.1 d 0.6											Saturn	60 01.1	1 24
v 1.1 d 0.6											Mer. Pass. h m		
v 2.7 d 0.1											v 2.6 d 0.0		

G.M.T.	SUN		MOON					Lat.	Twilight		Sun-rise	Moonrise			
	G.H.A.	Dec.	G.H.A.	φ	Dec.	d	H.P.		Naut.	Civil		30	1	2	3
d h	° ' "	° ' "	° ' "		° ' "			°	h m	h m	h m	h m	h m	h m	h m
30								N 72	□	□	□	■	00 26	00 10	00 51
00	179 08.9	N23 12.1	337 40.4	4.4	S17 57.4	4.7	60.8	N 70	□	□	□	23 49	23 49	23 48	23 46
01	194 08.8	12.0	352 03.8	4.4	17 52.7	4.8	60.8	68	□	□	□	23 23	23 32	23 38	23 42
02	209 08.7	11.9	6 27.2	4.5	17 47.9	5.0	60.8	66	□	□	□	23 03	23 19	23 30	23 38
03	224 08.6	11.7	20 50.7	4.5	17 42.9	5.0	60.8	64	□	□	□	00 16	22 46	23 08	23 23
04	239 08.4	11.6	35 14.2	4.5	17 37.9	5.2	60.8	62	□	□	□	01 41	22 33	22 58	23 17
05	254 08.3	11.4	49 37.7	4.6	17 32.7	5.3	60.8	60	□	□	□	02 16	22 23	22 50	23 12
06	269 08.2	N23 11.3	64 01.3	4.7	S17 27.4	5.5	60.8	N 58	□	□	□	02 42	22 21	22 50	23 12
07	284 08.1	11.1	78 25.0	4.6	17 21.9	5.5	60.8	56	□	□	□	03 02	22 11	22 42	23 07
08	299 07.9	11.0	92 48.6	4.7	17 16.4	5.7	60.8	54	□	□	□	03 18	22 03	22 36	23 03
09	314 07.8	10.8	107 12.3	4.8	17 10.7	5.8	60.8	52	□	□	□	03 32	21 55	22 30	23 00
10	329 07.7	10.7	121 36.1	4.8	17 04.9	6.0	60.8	50	□	□	□	03 44	21 48	22 25	22 56
11	344 07.6	10.5	135 59.9	4.9	16 58.9	6.0	60.8	48	□	□	□	03 55	21 41	22 20	22 53
12	359 07.5	N23 10.4	150 23.8	4.9	S16 52.9	6.2	60.8	N 40	□	□	□	04 17	21 28	22 10	22 47
13	14 07.3	10.2	164 47.7	5.0	16 46.7	6.3	60.8	35	□	□	□	04 35	21 17	22 01	22 41
14	29 07.2	10.1	179 11.7	5.0	16 40.4	6.4	60.8	30	□	□	□	04 49	21 07	21 54	22 36
15	44 07.1	9.9	193 35.7	5.1	16 34.0	6.5	60.8	20	□	□	□	05 02	20 59	21 48	22 32
16	59 07.0	09.8	207 59.8	5.1	16 27.5	6.7	60.8	N 10	□	□	□	05 24	20 44	21 36	22 25
17	74 06.8	09.6	222 23.9	5.2	16 20.8	6.7	60.8	0	□	□	□	05 43	20 31	21 26	22 18
18	89 06.7	N23 09.5	236 48.1	5.2	S16 14.1	6.9	60.8	S 10	□	□	□	06 00	20 19	21 17	22 12
19	104 06.6	09.3	251 12.3	5.3	16 07.2	6.9	60.7	20	□	□	□	06 17	20 07	21 08	22 06
20	119 06.5	09.1	265 36.6	5.3	16 00.3	7.1	60.7	30	□	□	□	06 36	19 54	20 58	21 59
21	134 06.4	9.0	280 00.9	5.5	15 53.2	7.2	60.7	35	□	□	□	06 56	19 39	20 46	21 52
22	149 06.2	08.8	294 25.4	5.4	15 46.0	7.3	60.7	40	□	□	□	07 08	19 31	20 40	21 48
23	164 06.1	08.7	308 49.8	5.6	15 38.7	7.4	60.7	45	□	□	□	07 23	19 21	20 32	21 43
1								S 50	□	□	□	07 39	19 09	20 23	21 37
00	179 06.0	N23 08.5	323 14.4	5.6	S15 31.3	7.5	60.7	52	□	□	□	18 55	20 13	21 30	22 46
01	194 05.9	08.4	337 39.0	5.6	15 23.8	7.6	60.7	54	□	□	□	18 49	20 08	21 27	22 45
02	209 05.8	08.2	352 03.6	5.7	15 16.2	7.7	60.7	56	□	□	□	18 42	20 02	21 23	22 43
03	224 05.6	08.0	6 28.3	5.8	15 08.5	7.8	60.7	58	□	□	□	18 33	19 56	21 20	22 42
04	239 05.5	07.9	20 53.1	5.8	15 00.7	7.9	60.7	S 60	□	□	□	18 24	19 49	21 15	22 40
05	254 05.4	07.7	35 17.9	5.9	14 52.8	8.0	60.6					18 14	19 42	21 11	22 38
06	269 05.3	N23 07.5	49 42.8	6.0	S14 44.8	8.2	60.6								
07	284 05.1	07.4	64 07.8	6.1	14 36.6	8.2	60.6								
08	299 05.0	07.2	78 32.9	6.1	14 28.4	8.2	60.6								
09	314 04.9	07.0	92 58.0	6.1	14 20.2	8.4	60.6								
10	329 04.8	06.9	107 23.1	6.1	14 11.8	8.5	60.6								
11	344 04.7	06.7	121 48.4	6.3	14 03.3	8.6	60.6								
12	359 04.5	N23 06.5	136 13.7	6.3	S13 54.7	8.6	60.5								
13	14 04.4	06.4	150 39.0	6.5	13 46.1	8.8	60.5								
14	29 04.3	06.2	165 04.5	6.5	13 37.3	8.8	60.5								
15	44 04.2	06.0	179 30.0	6.6	13 28.5	8.9	60.5								
16	59 04.1	05.9	193 55.6	6.6	13 19.6	9.0	60.5								
17	74 03.9	05.7	208 21.2	6.7	13 10.6	9.1	60.5								
18	89 03.8	N23 05.5	222 46.9	6.8	S13 01.5	9.1	60.4								
19	104 03.7	05.4	237 12.7	6.8	12 52.4	9.3	60.4								
20	119 03.6	05.2	251 38.6	6.9	12 43.1	9.3	60.4								
21	134 03.5	05.0	266 04.4	7.0	12 33.8	9.4	60.4								
22	149 03.4	04.8	280 30.4	7.1	12 24.4	9.4	60.4								
23	164 03.2	04.7	294 56.5	7.1	12 15.0	9.6	60.4								
2								N 40	□	□	□	06 44	07 55	09 06	10 16
00	179 03.1	N23 04.5	309 22.6	7.2	S12 05.4	9.6	60.3	35	□	□	□	06 55	08 03	09 12	10 19
01	194 03.0	04.3	323 48.8	7.3	11 55.8	9.7	60.3	30	□	□	□	07 04	08 11	09 18	10 23
02	209 02.9	04.1	338 15.1	7.3	11 46.1	9.7	60.3	20	□	□	□	07 20	08 24	09 27	10 28
03	224 02.8	03.9	352 41.4	7.4	11 36.4	9.8	60.3	N 10	□	□	□	07 34	08 36	09 36	10 33
04	239 02.6	03.8	7 07.8	7.5	11 26.6	9.9	60.3	0	□	□	□	07 48	08 47	09 44	10 37
05	254 02.5	03.6	21 34.3	7.5	11 16.7	9.9	60.2	S 10	□	□	□	08 01	08 58	09 51	10 42
06	269 02.4	N23 03.4	36 00.8	7.6	S11 06.8	10.0	60.2	20	□	□	□	08 15	09 09	09 59	10 46
07	284 02.3	03.2	50 27.4	7.7	10 56.8	10.1	60.2	30	□	□	□	08 31	09 22	10 09	10 52
08	299 02.2	03.0	64 54.1	7.8	10 46.7	10.1	60.2	35	□	□	□	08 40	09 29	10 14	10 55
09	314 02.1	02.9	79 20.9	7.8	10 36.6	10.2	60.1	40	□	□	□	08 50	09 38	10 20	10 58
10	329 01.9	02.7	93 47.7	7.9	10 26.4	10.3	60.1	45	□	□	□	09 02	09 48	10 27	11 02
11	344 01.8	02.5	108 14.6	7.9	10 16.1	10.3	60.1	S 50	□	□	□	09 17	09 59	10 35	11 06
12	359 01.7	N23 02.3	122 41.5	8.0	S10 05.8	10.3	60.1	52	□	□	□	09 24	10 05	10 39	11 08
13	14 01.6	02.1	137 08.5	8.1	9 55.5	10.4	60.1	54	□	□	□	09 31	10 11	10 43	11 11
14	29 01.5	01.9	151 35.6	8.2	9 45.1	10.5	60.0	56	□	□	□	09 40	10 17	10 48	11 13
15	44 01.3	01.7	166 02.8	8.2	9 34.6	10.5	60.0	58	□	□	□	09 50	10 25	10 53	11 16
16	59 01.2	01.6	180 30.0	8.3	9 24.1	10.5	60.0	S 60	□	□	□	10 01	10 33	10 59	11 19
17	74 01.1	01.4	194 57.3	8.3	9 13.6	10.6	60.0								
18	89 01.0	N23 01.2	209 24.6	8.4	S 9 03.0	10.7	59.9								
19	104 00.9	01.0	223 52.0	8.5	8 52.3	10.7	59.9								
20	119 00.8	00.8	238 19.5	8.6	8 41.6	10.7	59.9								
21	134 00.7	00.6	252 47.1	8.6	8 30.9	10.8	59.9								
22	149 00.5	00.4	267 14.7	8.6	8 20.1	10.8	59.9								
23	164 00.4	00.2	281 42.3	8.8	8 09.3	10.9	59.8								
	S.D. 15.8	d 0.2	S.D. 16.6		16.5		16.4								
								Day	SUN			MOON			
									Eqn. of Time	Mer. Pass.		Mer. Upper	Mer. Lower	Age	Phase
									00 ^h	12 ^h					
									m s	m s	h m	h m	h m	d	
								30	03 24	03 30	12 04	01 33	14 03	17	☉
								1	03 36	03 42	12 04	02 33	15 02	18	
								2	03 47	03 53	12 04	03 30	15 58	19	

G.M.T.	ARIES		VENUS -3.8		MARS +1.8		JUPITER -2.3		SATURN +0.4		STARS		
	G.H.A.	Dec.	G.H.A.	Dec.	G.H.A.	Dec.	G.H.A.	Dec.	G.H.A.	Dec.	Name	S.H.A.	Dec.
MONDAY													
3 00	280 46.7	226 43.5 N16 17.1	126 02.0 N11 39.1	333 19.1 S19 33.8	340 56.3 S20 44.7	Acamar	315 48.4	S 40 27.4					
01	295 49.1	241 43.4 17.7	141 03.1 38.6	348 21.8 33.9	355 59.0 44.8	Achernar	335 56.2	S 57 25.7					
02	310 51.6	256 43.3 18.3	156 04.2 38.0	3 24.5 34.0	11 01.6 44.8	Acrux	173 53.2	S 62 53.4					
03	325 54.1	271 43.1 .. 18.9	171 05.2 .. 37.4	18 27.3 .. 34.1	26 04.2 .. 44.8	Adhara	255 43.8	S 28 55.2					
04	340 56.5	286 43.0 19.6	186 06.3 36.9	33 30.0 34.1	41 06.9 44.9	Aldebaran	291 34.8	N 16 25.8					
05	355 59.0	301 42.9 20.2	201 07.4 36.3	48 32.7 34.2	56 09.5 44.9								
06	11 01.5	316 42.7 N16 20.8	216 08.4 N11 35.8	63 35.5 S19 34.3	71 12.2 S20 44.9	Alioth	166 55.2	N 56 10.5					
07	26 03.9	331 42.6 21.4	231 09.5 35.2	78 38.2 34.3	86 14.8 45.0	Alkaid	153 29.7	N 49 30.7					
08	41 06.4	346 42.4 22.1	246 10.6 34.6	93 41.0 34.4	101 17.5 45.0	Al Na'ir	28 32.7	S 47 08.7					
09	56 08.9	1 42.3 .. 22.7	261 11.6 .. 34.1	108 43.7 .. 34.5	116 20.1 .. 45.1	Alnilam	276 26.6	S 1 13.6					
10	71 11.3	16 42.2 23.3	276 12.7 33.5	123 46.4 34.6	131 22.8 45.1	Alphard	218 34.9	S 8 29.5					
11	86 13.8	31 42.0 23.9	291 13.7 33.0	138 49.2 34.6	146 25.4 45.1								
12	101 16.2	46 41.9 N16 24.5	306 14.8 N11 32.4	153 51.9 S19 34.7	161 28.0 S20 45.2	Alphecca	126 44.0	N 26 50.9					
13	116 18.7	61 41.7 25.2	321 15.9 31.8	168 54.6 34.8	176 30.7 45.2	Alpheratz	358 24.1	N 28 52.5					
14	131 21.2	76 41.6 25.8	336 16.9 31.3	183 57.4 34.9	191 33.3 45.2	Altair	62 46.2	N 8 46.0					
15	146 23.6	91 41.5 .. 26.4	351 18.0 .. 30.7	199 00.1 .. 34.9	206 36.0 .. 45.3	Ankaa	353 54.4	S 42 30.7					
16	161 26.1	106 41.3 27.0	6 19.1 30.1	204 02.9 35.0	221 38.6 45.3	Antares	113 14.2	S 26 20.8					
17	176 28.6	121 41.2 27.6	21 20.1 29.6	229 05.6 35.1	236 41.3 45.4								
18	191 31.0	136 41.0 N16 28.3	36 21.2 N11 29.0	244 08.3 S19 35.1	251 43.9 S20 45.4	Arcturus	146 31.4	N 19 23.2					
19	206 33.5	151 40.9 28.9	51 22.3 28.5	259 11.1 35.2	266 46.6 45.4	Atria	108 50.8	S 68 57.6					
20	221 36.0	166 40.7 29.5	66 23.3 27.9	274 13.8 35.3	281 49.2 45.5	Avior	234 34.6	S 59 23.3					
21	236 38.4	181 40.6 .. 30.1	81 24.4 .. 27.3	289 16.6 .. 35.4	296 51.9 .. 45.5	Bellatrix	279 14.5	N 6 18.8					
22	251 40.9	196 40.4 30.7	96 25.4 26.8	304 19.3 35.4	311 54.5 45.5	Betelgeuse	271 44.1	N 7 24.0					
23	266 43.4	211 40.3 31.3	111 26.5 26.2	319 22.0 35.5	326 57.1 45.6								
TUESDAY													
4 00	281 45.8	226 40.1 N16 32.0	126 27.6 N11 25.6	334 24.8 S19 35.6	341 59.8 S20 45.6	Canopus	264 14.1	S 52 40.5					
01	296 48.3	241 40.0 32.6	141 28.6 25.1	349 27.5 35.7	357 02.4 45.7	Capella	281 33.0	N 45 57.4					
02	311 50.7	256 39.8 33.2	156 29.7 24.5	4 30.3 35.7	12 05.1 45.7	Deneb	49 57.8	N 45 08.5					
03	326 53.2	271 39.7 .. 33.8	171 30.8 .. 24.0	19 33.0 .. 35.8	27 07.7 .. 45.7	Denebola	183 13.8	N 14 47.4					
04	341 55.7	286 39.5 34.4	186 31.8 23.4	34 35.8 35.9	42 10.4 45.8	Diphda	349 35.3	S 18 11.8					
05	356 58.1	301 39.4 35.0	201 32.9 22.8	49 38.5 35.9	57 13.0 45.8								
06	12 00.6	316 39.2 N16 35.7	216 33.9 N11 22.3	64 41.2 S19 36.0	72 15.7 S20 45.9	Dubhe	194 40.2	N 61 57.9					
07	27 03.1	331 39.1 36.3	231 35.0 21.7	79 44.0 36.1	87 18.3 45.9	Elnath	279 02.7	N 28 34.4					
08	42 05.5	346 38.9 36.9	246 36.1 21.1	94 46.7 36.2	102 21.0 45.9	Eltanin	91 03.9	N 51 29.8					
09	57 08.0	1 38.8 .. 37.5	261 37.1 .. 20.6	109 49.5 .. 36.2	117 23.6 .. 46.0	Enif	34 25.4	N 9 41.9					
10	72 10.5	16 38.6 38.1	276 38.2 20.0	124 52.2 36.3	132 26.3 46.0	Fomalhaut	16 07.1	S 29 49.4					
11	87 12.9	31 38.5 38.7	291 39.3 19.4	139 55.0 36.4	147 28.9 46.0								
12	102 15.4	46 38.3 N16 39.3	306 40.3 N11 18.9	154 57.7 S19 36.5	162 31.5 S20 46.1	Gacrux	172 44.7	S 56 54.1					
13	117 17.8	61 38.1 40.0	321 41.4 18.3	170 00.4 36.5	177 34.2 46.1	Gienah	176 32.8	S 17 19.7					
14	132 20.3	76 38.0 40.6	336 42.5 17.8	185 03.2 36.6	192 36.8 46.2	Hadar	149 43.4	S 60 11.4					
15	147 22.8	91 37.8 .. 41.2	351 43.5 .. 17.2	200 05.9 .. 36.7	207 39.5 .. 46.2	Hamal	328 45.2	N 23 16.6					
16	162 25.2	106 37.6 41.8	6 44.6 16.6	215 08.7 36.8	222 42.1 46.2	Kaus Aust.	84 35.5	S 34 24.1					
17	177 27.7	121 37.5 42.4	21 45.6 16.1	230 11.4 36.8	237 44.8 46.3								
18	192 30.2	136 37.3 N16 43.0	36 46.7 N11 15.5	245 14.2 S19 36.9	252 47.4 S20 46.3	Kochab	137 17.8	N 74 19.2					
19	207 32.6	151 37.2 43.6	51 47.8 14.9	260 16.9 37.0	267 50.1 46.3	Markab	14 17.3	N 14 59.8					
20	222 35.1	166 37.0 44.2	66 48.8 14.4	275 19.7 37.0	282 52.7 46.4	Menkar	314 56.4	N 3 56.3					
21	237 37.6	181 36.8 .. 44.8	81 49.9 .. 13.8	290 22.4 .. 37.1	297 55.4 .. 46.4	Menkent	148 53.8	S 36 10.9					
22	252 40.0	196 36.7 45.4	96 51.0 13.2	305 25.2 37.2	312 58.0 46.5	Miaplacidus	221 48.7	S 69 33.7					
23	267 42.5	211 36.5 46.1	111 52.0 12.7	320 27.9 37.3	328 00.7 46.5								
WEDNESDAY													
5 00	282 45.0	226 36.3 N16 46.7	126 53.1 N11 12.1	335 30.6 S19 37.3	343 03.3 S20 46.5	Mirfak	309 37.0	N 49 43.2					
01	297 47.4	241 36.2 47.3	141 54.2 11.5	350 33.4 37.4	358 05.9 46.6	Nunki	76 46.6	S 26 20.6					
02	312 49.9	256 36.0 47.9	156 55.2 11.0	5 36.1 37.5	13 08.6 46.6	Peacock	54 20.6	S 56 51.4					
03	327 52.3	271 35.8 .. 48.5	171 56.3 .. 10.4	20 38.9 .. 37.6	28 11.2 .. 46.6	Pollux	244 16.1	N 28 07.2					
04	342 54.8	286 35.7 49.1	186 57.3 09.8	35 41.6 37.6	43 13.9 46.7	Procyon	245 41.2	N 5 19.4					
05	357 57.3	301 35.5 49.7	201 58.4 09.3	50 44.4 37.7	58 16.5 46.7								
06	12 59.7	316 35.3 N16 50.3	216 59.5 N11 08.7	65 47.1 S19 37.8	73 19.2 S20 46.8	Rasalhague	96 42.6	N 12 35.4					
07	28 02.2	331 35.1 50.9	232 00.5 08.1	80 49.9 37.9	88 21.8 46.8	Regulus	208 25.5	N 12 09.4					
08	43 04.7	346 35.0 51.5	247 01.6 07.6	95 52.6 37.9	103 24.5 46.8	Rigel	281 50.1	S 8 14.8					
09	58 07.1	1 34.8 .. 52.1	262 02.7 .. 07.0	110 55.4 .. 38.0	118 27.1 .. 46.9	Rigel Kent.	140 45.1	S 60 40.7					
10	73 09.6	16 34.6 52.7	277 03.7 06.4	125 58.1 38.1	133 29.8 46.9	Sabik	102 57.3	S 15 40.6					
11	88 12.1	31 34.4 53.3	292 04.8 05.9	141 00.9 38.2	148 32.4 47.0								
12	103 14.5	46 34.3 N16 53.9	307 05.9 N11 05.3	156 03.6 S19 38.2	163 35.1 S20 47.0	Schedar	350 25.3	N 56 19.2					
13	118 17.0	61 34.1 54.5	322 06.9 04.7	171 06.4 38.3	178 37.7 47.0	Shaula	97 14.9	S 37 04.6					
14	133 19.4	76 33.9 55.1	337 08.0 04.2	186 09.1 38.4	193 40.4 47.1	Sirius	259 08.7	S 16 39.8					
15	148 21.9	91 33.7 .. 55.8	352 09.0 .. 03.6	201 11.9 .. 38.5	208 43.0 .. 47.1	Spica	159 12.6	S 10 57.6					
16	163 24.4	106 33.6 56.4	7 10.1 03.0	216 14.6 38.5	223 45.7 47.1	Suhail	223 21.7	S 43 16.7					
17	178 26.8	121 33.4 57.0	22 11.2 02.5	231 17.4 38.6	238 48.3 47.2								
18	193 29.3	136 33.2 N16 57.6	37 12.2 N11 01.9	246 20.1 S19 38.7	253 50.9 S20 47.2	Vega	81 05.1	N 38 45.0					
19	208 31.8	151 33.0 58.2	52 13.3 01.3	261 22.9 38.7	268 53.6 47.3	Zuben'ubi	137 48.8	S 15 52.9					
20	223 34.2	166 32.8 58.8	67 14.4 00.7	276 25.6 38.8	283 56.2 47.3								
21	238 36.7	181 32.7 16 59.4	82 15.4 11 00.2	291 28.4 .. 38.9	298 58.9 .. 47.3								
22	253 39.2	196 32.5 17 00.0	97 16.5 10 59.6	306 31.1 39.0	314 01.5 47.4	Venus	304 54.3	8 53					
23	268 41.6	211 32.3 00.6	112 17.5 59.0	321 33.9 39.0	329 04.2 47.4	Mars	204 41.8	15 33					
						Jupiter	52 39.0	1 42					
						Saturn	60 14.0	1 12					
Mer. Pass.	h 5 12.1	m 5 12.1	v -0.2 d 0.6	v 1.1 d 0.6	v 2.7 d 0.1	v 2.6 d 0.0							

G.M.T.		SUN		MOON				Lat.	Twilight		Sun-rise	Moonrise							
		G.H.A.	Dec.	G.H.A.	<i>v</i>	Dec.	<i>d</i>		H.P.	Naut.		Civil	3	4	5	6			
d	h	°	'	°	'	°	'	°	'	°	'	h	m	h	m	h	m	h	m
MONDAY	3 00	179 00.3	N23 00.0	296 10.1	8.8 S	7 58.4	10.9	59.8	N 72	□	□	□	23 46	23 43	23 35	23 27			
	01	194 00.2	22 59.8	310 37.9	8.8	7 47.5	10.9	59.8	N 70	□	□	□	23 42	23 44	23 42	23 41			
	02	209 00.1	59.7	325 05.7	9.0	7 36.6	11.0	59.7	68	□	□	□	23 42	23 45	23 48	23 52			
	03	224 00.0	59.5	339 33.7	9.0	7 25.6	11.0	59.7	66	///	///	00 40	23 38	23 46	23 53	24 02			
	04	238 59.8	59.3	354 01.7	9.0	7 14.6	11.0	59.7	64	///	///	01 46	23 36	23 47	23 58	24 10			
	05	253 59.7	59.1	8 29.7	9.1	7 03.6	11.1	59.6	62	///	///	02 21	23 33	23 47	24 01	00 01			
	06	268 59.6	N22 58.9	22 57.8	9.2 S	6 52.5	11.1	59.6	60	///	01 10	02 45	23 31	23 48	24 05	00 05			
	07	283 59.5	58.7	37 26.0	9.2	6 41.4	11.1	59.6	N 58	///	01 53	03 05	23 29	23 48	24 08	00 08			
	08	298 59.4	58.5	51 54.2	9.3	6 30.3	11.2	59.6	56	///	02 20	03 21	23 27	23 49	24 10	00 11			
	09	313 59.3	58.3	66 22.5	9.3	6 19.1	11.1	59.5	54	01 04	02 41	03 34	23 25	23 49	24 13	00 13			
	10	328 59.1	58.1	80 50.8	9.4	6 08.0	11.2	59.5	52	01 44	02 58	03 46	23 24	23 50	24 15	00 15			
	11	343 59.0	57.9	95 19.2	9.5	5 56.8	11.3	59.5	50	02 09	03 13	03 57	23 23	23 50	24 17	00 17			
	12	358 58.9	N22 57.7	109 47.7	9.5 S	5 45.5	11.2	59.5	45	02 53	03 42	04 19	23 20	23 51	24 21	00 21			
	13	13 58.8	57.5	124 16.2	9.6	5 34.3	11.3	59.4	N 40	03 22	04 03	04 36	23 17	23 51	24 25	00 25			
	14	28 58.7	57.3	138 44.8	9.6	5 23.0	11.3	59.4	35	03 45	04 21	04 51	23 15	23 52	24 28	00 28			
	15	43 58.6	57.1	153 13.4	9.7	5 11.7	11.3	59.4	30	04 03	04 36	05 04	23 13	23 52	24 30	00 30			
	16	58 58.5	56.9	167 42.1	9.7	5 00.4	11.3	59.3	20	04 31	05 01	05 25	23 10	23 53	24 35	00 35			
	17	73 58.3	56.6	182 10.8	9.8	4 49.1	11.3	59.3	N 10	04 53	05 21	05 44	23 07	23 54	24 40	00 40			
	18	88 58.2	N22 56.4	196 39.6	9.8 S	4 37.8	11.4	59.3	0	05 12	05 38	06 01	23 04	23 55	24 44	00 44			
	19	103 58.1	56.2	211 08.4	9.9	4 26.4	11.4	59.3	S 10	05 29	05 55	06 18	23 02	23 56	24 48	00 48			
	20	118 58.0	56.0	225 37.3	9.9	4 15.0	11.4	59.2	20	05 44	06 12	06 36	22 59	23 56	24 52	00 52			
	21	133 57.9	55.8	240 06.2	10.0	4 03.6	11.4	59.2	30	06 00	06 30	06 56	22 56	23 57	24 57	00 57			
	22	148 57.8	55.6	254 35.2	10.1	3 52.2	11.4	59.2	35	06 09	06 40	07 08	22 54	23 58	25 00	01 00			
23	163 57.7	55.4	269 04.3	10.1	3 40.8	11.4	59.1	40	06 18	06 52	07 22	22 52	23 59	25 04	01 04				
24					3 40.8	11.4	59.1	45	06 28	07 05	07 38	22 49	23 59	25 08	01 08				
TUESDAY	4 00	178 57.6	N22 55.2	283 33.4	10.1 S	3 29.4	11.4	59.1	S 50	06 39	07 20	07 59	22 46	24 00	00 00	01 12			
	01	193 57.4	55.0	298 02.5	10.2	3 18.0	11.4	59.1	52	06 44	07 28	08 08	22 45	24 01	00 01	01 14			
	02	208 57.3	54.8	312 31.7	10.2	3 06.6	11.5	59.1	54	06 50	07 36	08 19	22 43	24 01	00 01	01 17			
	03	223 57.2	54.6	327 00.9	10.3	2 55.1	11.4	59.0	56	06 56	07 44	08 31	22 42	24 02	00 02	01 19			
	04	238 57.1	54.3	341 30.2	10.3	2 43.7	11.4	59.0	58	07 02	07 54	08 45	22 40	24 02	00 02	01 22			
	05	253 57.0	54.1	355 59.5	10.3	2 32.3	11.5	59.0	S 60	07 09	08 05	09 02	22 38	24 03	00 03	01 26			
	06	268 56.9	N22 53.9	10 28.8	10.5 S	2 20.8	11.4	58.9											
	07	283 56.8	53.7	24 58.3	10.4	2 09.4	11.5	58.9											
	08	298 56.6	53.5	39 27.7	10.5	1 57.9	11.4	58.9	Lat.	Sun-set	Twilight		Moonset						
	09	313 56.5	53.3	53 57.2	10.5	1 46.5	11.4	58.8			Civil	Naut.	3	4	5	6			
	10	328 56.4	53.1	68 26.7	10.6	1 35.1	11.5	58.8	°	h m	h m	h m	h m	h m	h m	h m			
	11	343 56.3	52.8	82 56.3	10.6	1 23.6	11.4	58.8	N 72	□	□	□	09 14	11 10	13 02	14 52			
	12	358 56.2	N22 52.6	97 25.9	10.7 S	1 12.2	11.4	58.8	N 70	□	□	□	09 23	11 12	12 57	14 39			
	13	13 56.1	52.4	111 55.6	10.6	1 00.8	11.5	58.7	68	□	□	□	09 31	11 14	12 53	14 30			
	14	28 56.0	52.2	126 25.2	10.8	0 49.3	11.4	58.7	66	23 24	///	///	09 38	11 15	12 50	14 21			
	15	43 55.9	52.0	140 55.0	10.7	0 37.9	11.4	58.7	64	22 21	///	///	09 43	11 16	12 47	14 15			
	16	58 55.8	51.7	155 24.7	10.8	0 26.5	11.4	58.6	62	21 47	///	///	09 48	11 17	12 44	14 09			
	17	73 55.6	51.5	169 54.5	10.9	0 15.1	11.4	58.6	60	21 23	22 56	///	09 52	11 18	12 42	14 04			
	18	88 55.5	N22 51.3	184 24.4	10.8 S	0 03.7	11.3	58.6	N 58	21 03	22 15	///	09 56	11 19	12 40	13 59			
	19	103 55.4	51.1	198 54.2	10.9 N	0 07.6	11.4	58.5	56	20 47	21 48	///	09 59	11 20	12 39	13 55			
	20	118 55.3	50.8	213 24.1	11.0	0 19.0	11.3	58.5	54	20 34	21 27	23 02	10 02	11 20	12 37	13 52			
	21	133 55.2	50.6	227 54.1	10.9	0 30.3	11.4	58.5	52	20 22	21 10	22 24	10 04	11 21	12 36	13 49			
	22	148 55.1	50.4	242 24.0	11.0	0 41.7	11.3	58.4	50	20 11	20 55	21 58	10 06	11 22	12 35	13 46			
23	163 55.0	50.2	256 54.0	11.1	0 53.0	11.3	58.4	45	19 50	20 27	21 15	10 11	11 23	12 32	13 39				
WEDNESDAY	5 00	178 54.9	N22 49.9	271 24.1	11.0 N	1 04.3	11.3	58.4	N 40	19 32	20 05	20 46	10 16	11 24	12 30	13 34			
	01	193 54.8	49.7	285 54.1	11.1	1 15.6	11.2	58.4	35	19 18	19 47	20 23	10 19	11 25	12 28	13 30			
	02	208 54.6	49.5	300 24.2	11.1	1 26.8	11.3	58.3	30	19 05	19 32	20 05	10 23	11 25	12 26	13 26			
	03	223 54.5	49.3	314 54.3	11.2	1 38.1	11.2	58.3	20	18 43	19 08	19 37	10 28	11 27	12 23	13 19			
	04	238 54.4	49.0	329 24.5	11.2	1 49.3	11.2	58.3	N 10	18 25	18 48	19 15	10 33	11 28	12 21	13 13			
	05	253 54.3	48.8	343 54.7	11.2	2 00.5	11.2	58.2	0	18 08	18 30	18 56	10 37	11 29	12 18	13 07			
	06	268 54.2	N22 48.6	358 24.9	11.2 N	2 11.7	11.1	58.2	S 10	17 51	18 14	18 40	10 42	11 30	12 16	13 01			
	07	283 54.1	48.3	12 55.1	11.2	2 22.8	11.2	58.2	20	17 33	17 57	18 24	10 46	11 31	12 13	12 55			
	08	298 54.0	48.1	27 25.3	11.3	2 34.0	11.1	58.1	30	17 12	17 38	18 08	10 52	11 32	12 10	12 48			
	09	313 53.9	47.9	41 55.6	11.3	2 45.1	11.1	58.1	35	17 00	17 28	18 00	10 55	11 32	12 08	12 45			
	10	328 53.8	47.6	56 25.9	11.3	2 56.2	11.0	58.1	40	16 46	17 17	17 51	10 58	11 33	12 07	12 40			
	11	343 53.7	47.4	70 56.2	11.4	3 07.2	11.1	58.1	45	16 30	17 04	17 41	11 02	11 34	12 04	12 35			
	12	358 53.6	N22 47.2	85 26.6	11.3 N	3 18.3	11.0	58.0	S 50	16 10	16 48	17 29	11 06	11 35	12 02	12 29			
	13	13 53.5	46.9	99 56.9	11.4	3 29.3	10.9	58.0	52	16 01	16 41	17 25	11 08	11 35	12 00	12 26			
	14	28 53.3	46.7	114 27.3	11.4	3 40.2	11.0	58.0	54	15 50	16 33	17 19	11 11	11 35	11 59	12 23			
	15	43 53.2	46.5	128 57.7	11.4	3 51.2	10.9	57.9	56	15 38	16 24	17 13	11 13	11 36	11 58	12 19			
	16	58 53.1	46.2	143 28.1	11.5	4 02.1	10.8	57.9	58	15 24	16 15	17 07	11 16	11 36	11 56	12 16			
	17	73 53.0	46.0	157 58.6	11.4	4 12.9	10.9	57.9	S 60	15 07	16 04	17 00	11 19	11 37	11 54	12 11			
	18	88 52.9	N22 45.8	172 29.0	11.5 N	4 23.8	10.8	57.8											
	19	103 52.8	45.5	186 59.5	11.5	4 34.6	10.8	57.8											
	20	118 52.7	45.3	201 30.0	11.5	4 45.4	10.7	57.8	Day	SUN		MOON							
	21	133 52.6	45.0	216 00.5	11.5	4 56.1	10.7	57.8		Eqn. of Time	Mer. Pass.	Mer. Upper	Pass. Lower	Age	Phase				
	22	148 52.5	44.8	230 31.0	11.5	5 06.8	10.7	57.7		00h	12h								
23	163 52.4	44.5	245 01.5	11.6	5 17.5	10.6	57.7	3	m s	m s	h m	h m	h m	d					
								4	03 59	04 04	12 04	04 25	16 51	20					
								5	04 10	04 15	12 04	05 17	17 42	21					
									04 20	04 26	12 04	06 07	18 31	22					

G.M.T.	ARIES		VENUS -3-8		MARS +1-8		JUPITER -2-3		SATURN +0-4		STARS		
	G.H.A.	Dec.	G.H.A.	Dec.	G.H.A.	Dec.	G.H.A.	Dec.	G.H.A.	Dec.	Name	S.H.A.	Dec.
d h													
6 00	283 44.1	226 32.1 N17 01.2	127 18.6 N10 58.5	336 36.6 S19 39.1	344 06.8 S20 47.5	Acamar	315 48.4	S 40 27.4					
01	298 46.6	241 31.9 01.8	142 19.7 57.9	351 39.4 39.2	359 09.5 47.5	Achernar	335 56.2	S 57 25.7					
02	313 49.0	256 31.7 02.4	157 20.7 57.3	6 42.1 39.3	14 12.1 47.5	Acrux	173 53.3	S 62 53.4					
03	328 51.5	271 31.5 .. 03.0	172 21.8 .. 56.8	21 44.9 .. 39.3	29 14.8 .. 47.6	Adhara	255 43.8	S 28 55.2					
04	343 53.9	286 31.4 03.6	187 22.9 56.2	36 47.6 39.4	44 17.4 47.6	Aldebaran	291 34.8	N 16 25.8					
05	358 56.4	301 31.2 04.2	202 23.9 55.6	51 50.4 39.5	59 20.1 47.6								
06	13 58.9	316 31.0 N17 04.8	217 25.0 N10 55.1	66 53.1 S19 39.6	74 22.7 S20 47.7	Alioth	166 55.2	N 56 10.5					
07	29 01.3	331 30.8 05.4	232 26.1 54.5	81 55.9 39.6	89 25.4 47.7	Alkaid	153 29.7	N 49 30.7					
08	44 03.8	346 30.6 06.0	247 27.1 53.9	96 58.6 39.7	104 28.0 47.8	Al Na'ir	28 32.7	S 47 08.7					
09	59 06.3	1 30.4 .. 06.5	262 28.2 .. 53.3	112 01.4 .. 39.8	119 30.7 .. 47.8	Alnilam	276 26.6	S 1 13.6					
10	74 08.7	16 30.2 07.1	277 29.2 52.8	127 04.1 39.9	134 33.3 47.8	Alphard	218 34.9	S 8 29.5					
11	89 11.2	31 30.0 07.7	292 30.3 52.2	142 06.9 39.9	149 36.0 47.9								
12	104 13.7	46 29.8 N17 08.3	307 31.4 N10 51.6	157 09.6 S19 40.0	164 38.6 S20 47.9	Alphecca	126 44.1	N 26 50.9					
13	119 16.1	61 29.6 08.9	322 32.4 51.1	172 12.4 40.1	179 41.3 48.0	Alpheratz	358 24.1	N 28 52.5					
14	134 18.6	76 29.4 09.5	337 33.5 50.5	187 15.1 40.2	194 43.9 48.0	Altair	62 46.2	N 8 46.0					
15	149 21.1	91 29.2 .. 10.1	352 34.6 .. 49.9	202 17.9 .. 40.2	209 46.6 .. 48.0	Ankaa	353 54.4	S 42 30.7					
16	164 23.5	106 29.1 10.7	7 35.6 49.3	217 20.7 40.3	224 49.2 48.1	Antares	113 14.2	S 26 20.8					
17	179 26.0	121 28.9 11.3	22 36.7 48.8	232 23.4 40.4	239 51.9 48.1								
18	194 28.4	136 28.7 N17 11.9	37 37.8 N10 48.2	247 26.2 S19 40.5	254 54.5 S20 48.1	Arcturus	146 31.5	N 19 23.2					
19	209 30.9	151 28.5 12.5	52 38.8 47.6	262 28.9 40.5	269 57.2 48.2	Atria	108 50.8	S 68 57.6					
20	224 33.4	166 28.3 13.1	67 39.9 47.1	277 31.7 40.6	284 59.8 48.2	Avior	234 34.6	S 59 23.3					
21	239 35.8	181 28.1 .. 13.7	82 40.9 .. 46.5	292 34.4 .. 40.7	300 02.5 .. 48.3	Bellatrix	279 14.5	N 6 18.8					
22	254 38.3	196 27.9 14.3	97 42.0 45.9	307 37.2 40.8	315 05.1 48.3	Betelgeuse	271 44.1	N 7 24.0					
23	269 40.8	211 27.7 14.9	112 43.1 45.3	322 39.9 40.8	330 07.8 48.3								
7 00	284 43.2	226 27.5 N17 15.5	127 44.1 N10 44.8	337 42.7 S19 40.9	345 10.4 S20 48.4	Canopus	264 14.1	S 52 40.5					
01	299 45.7	241 27.3 16.0	142 45.2 44.2	352 45.4 41.0	0 13.1 48.4	Capella	281 32.9	N 45 57.4					
02	314 48.2	256 27.1 16.6	157 46.3 43.6	7 48.2 41.1	15 15.7 48.5	Deneb	49 57.8	N 45 08.5					
03	329 50.6	271 26.9 .. 17.2	172 47.3 .. 43.1	22 51.0 .. 41.1	30 18.4 .. 48.5	Denebola	183 13.8	N 14 47.4					
04	344 53.1	286 26.6 17.8	187 48.4 42.5	37 53.7 41.2	45 21.0 48.5	Diphda	349 35.3	S 18 11.8					
05	359 55.6	301 26.4 18.4	202 49.4 41.9	52 56.5 41.3	60 23.7 48.6								
06	14 58.0	316 26.2 N17 19.0	217 50.5 N10 41.3	67 59.2 S19 41.4	75 26.3 S20 48.6	Dubhe	194 40.2	N 61 57.8					
07	30 00.5	331 26.0 19.6	232 51.6 40.8	83 02.0 41.4	90 29.0 48.6	Elnath	279 02.6	N 28 34.4					
08	45 02.9	346 25.8 20.2	247 52.6 40.2	93 04.7 41.5	105 31.6 48.7	Eltanin	91 03.9	N 51 29.8					
09	60 05.4	1 25.6 .. 20.7	262 53.7 .. 39.6	113 07.5 .. 41.6	120 34.3 .. 48.7	Enif	34 25.4	N 9 41.9					
10	75 07.9	16 25.4 21.3	277 54.8 39.0	128 10.3 41.7	135 36.9 48.8	Fomalhaut	16 07.1	S 29 49.4					
11	90 10.3	31 25.2 21.9	292 55.8 38.5	143 13.0 41.7	150 39.6 48.8								
12	105 12.8	46 25.0 N17 22.5	307 56.9 N10 37.9	158 15.8 S19 41.8	165 42.2 S20 48.8	Gacrux	172 44.7	S 56 54.1					
13	120 15.3	61 24.8 23.1	322 57.9 37.3	173 18.5 41.9	180 44.9 48.9	Gienah	176 32.8	S 17 19.7					
14	135 17.7	76 24.6 23.7	337 59.0 36.7	188 21.3 42.0	195 47.5 48.9	Hadar	149 43.4	S 60 11.4					
15	150 20.2	91 24.4 .. 24.3	353 00.1 .. 36.2	203 24.0 .. 42.1	210 50.2 .. 49.0	Hamal	328 45.2	N 23 16.7					
16	165 22.7	106 24.1 24.8	8 01.1 35.6	218 26.8 42.1	225 52.8 49.0	Kaus Aust.	84 35.5	S 34 24.1					
17	180 25.1	121 23.9 25.4	23 02.2 35.0	233 29.6 42.2	240 55.5 49.0								
18	195 27.6	136 23.7 N17 26.0	38 03.3 N10 34.4	248 32.3 S19 42.3	255 58.1 S20 49.1	Kochab	137 17.8	N 74 19.2					
19	210 30.0	151 23.5 26.6	53 04.3 33.9	263 35.1 42.4	271 00.8 49.1	Markab	14 17.3	N 14 59.8					
20	225 32.5	166 23.3 27.2	68 05.4 33.3	278 37.8 42.4	286 03.4 49.2	Menkar	314 56.3	N 3 56.3					
21	240 35.0	181 23.1 .. 27.8	83 06.4 .. 32.7	293 40.6 .. 42.5	301 06.1 .. 49.2	Menkent	148 53.8	S 36 10.9					
22	255 37.4	196 22.8 28.3	98 07.5 32.1	308 43.4 42.6	316 08.7 49.2	Miaplacidus	221 48.7	S 69 33.7					
23	270 39.9	211 22.6 28.9	113 08.6 31.6	323 46.1 42.7	331 11.4 49.3								
8 00	285 42.4	226 22.4 N17 29.5	128 09.6 N10 31.0	338 48.9 S19 42.7	346 14.0 S20 49.3	Mirfak	309 36.9	N 49 43.2					
01	300 44.8	241 22.2 30.1	143 10.7 30.4	353 51.6 42.8	1 16.7 49.3	Nunki	76 46.6	S 26 20.6					
02	315 47.3	256 22.0 30.7	158 11.7 29.8	8 54.4 42.9	16 19.3 49.4	Peacock	54 20.5	S 56 51.4					
03	330 49.8	271 21.8 .. 31.2	173 12.8 .. 29.3	23 57.2 .. 43.0	31 22.0 .. 49.4	Pollux	244 16.1	N 28 07.2					
04	345 52.2	286 21.5 31.8	188 13.9 28.7	38 59.9 43.0	46 24.6 49.5	Procyon	245 41.2	N 5 19.4					
05	0 54.7	301 21.3 32.4	203 14.9 28.1	54 02.7 43.1	61 27.3 49.5								
06	15 57.2	316 21.1 N17 33.0	218 16.0 N10 27.5	69 05.4 S19 43.2	76 29.9 S20 49.5	Rasalhague	96 42.6	N 12 35.4					
07	30 59.6	331 20.9 33.5	233 17.1 27.0	84 08.2 43.3	91 32.6 49.6	Regulus	208 25.5	N 12 09.4					
08	46 02.1	346 20.6 34.1	248 18.1 26.4	99 11.0 43.3	106 35.2 49.6	Rigel	281 50.1	S 8 14.8					
09	61 04.5	1 20.4 .. 34.7	263 19.2 .. 25.8	114 13.7 .. 43.4	121 37.9 .. 49.7	Rigel Kent.	140 45.1	S 60 40.7					
10	76 07.0	16 20.2 35.3	278 20.2 25.2	129 16.5 43.5	136 40.5 49.7	Sabik	102 57.3	S 15 40.6					
11	91 09.5	31 20.0 35.9	293 21.3 24.7	144 19.2 43.6	151 43.2 49.7								
12	106 11.9	46 19.7 N17 36.4	308 22.4 N10 24.1	159 22.0 S19 43.6	166 45.8 S20 49.8	Schedar	350 25.3	N 56 19.3					
13	121 14.4	61 19.5 37.0	323 23.4 23.5	174 24.8 43.7	181 48.5 49.8	Shaula	97 14.9	S 37 04.6					
14	136 16.9	76 19.3 37.6	338 24.5 22.9	189 27.5 43.8	196 51.1 49.8	Sirius	259 08.7	S 16 39.8					
15	151 19.3	91 19.0 .. 38.1	353 25.6 .. 22.4	204 30.3 .. 43.9	211 53.8 .. 49.9	Spica	159 12.6	S 10 57.6					
16	166 21.8	106 18.8 38.7	8 26.6 21.8	219 33.1 44.0	226 56.4 49.9	Suhail	223 21.7	S 43 16.7					
17	181 24.3	121 18.6 39.3	23 27.7 21.2	234 35.8 44.0	241 59.1 50.0								
18	196 26.7	136 18.4 N17 39.9	38 28.7 N10 20.6	249 38.6 S19 44.1	257 01.7 S20 50.0	Vega	81 05.1	N 38 45.0					
19	211 29.2	151 18.1 40.4	53 29.8 20.0	264 41.3 44.2	272 04.4 50.0	Zuben'ubi	137 48.8	S 15 52.9					
20	226 31.7	166 17.9 41.0	68 30.9 19.5	279 44.1 44.3	287 07.0 50.1								
21	241 34.1	181 17.7 .. 41.6	83 31.9 .. 18.9	294 46.9 .. 44.3	302 09.7 .. 50.1								
22	256 36.6	196 17.4 42.2	98 33.0 18.3	309 49.6 44.4	317 12.3 50.2	Venus	301 44.3	8 54					
23	271 39.0	211 17.2 42.7	113 34.1 17.7	324 52.4 44.5	332 15.0 50.2	Mars	203 00.9	15 28					
						Jupiter	52 59.5	1 29					
						Saturn	60 27.2	0 59					
Mer. Pass.	5 00.3	v -0.2 d 0.6	v 1.1 d 0.6	v 2.8 d 0.1	v 2.7 d 0.0								

G.M.T.		ARIES		VENUS -38		MARS +18		JUPITER -23		SATURN +04		STARS			
		G.H.A.	G.H.A.	Dec.	G.H.A.	Dec.	G.H.A.	Dec.	G.H.A.	Dec.	G.H.A.	Dec.	Name	S.H.A.	Dec.
SUNDAY	9 00	286 41.5	226 17.0	N17 43.3	128 35.1	N10 17.1	339 55.2	S19 44.6	347 17.7	S20 50.2			Acamar	315 48.4	S 40 27.4
	01	301 44.0	241 16.7	43.9	143 36.2	16.6	354 57.9	44.6	2 20.3	50.3			Achernar	335 56.1	S 57 25.7
	02	316 46.4	256 16.5	44.4	158 37.2	16.0	10 00.7	44.7	17 23.0	50.3			Acrux	173 53.3	S 62 53.4
	03	331 48.9	271 16.2	45.0	173 38.3	15.4	25 03.5	44.8	32 25.6	50.3			Adhara	255 43.8	S 28 55.2
	04	346 51.4	286 16.0	45.6	188 39.4	14.8	40 06.2	44.9	47 28.3	50.4			Aldebaran	291 34.7	N 16 25.8
	05	1 53.8	301 15.8	46.1	203 40.4	14.3	55 09.0	45.0	62 30.9	50.4					
	06	16 56.3	316 15.5	N17 46.7	218 41.5	N10 13.7	70 11.7	S19 45.0	77 33.6	S20 50.5			Alioth	166 55.2	N 56 10.5
	07	31 58.8	331 15.3	47.3	233 42.6	13.1	85 14.5	45.1	92 36.2	50.5			Alkaid	153 29.8	N 49 30.0
	08	47 01.2	346 15.0	47.8	248 43.6	12.5	100 17.3	45.2	107 38.9	50.5			Al Na'ir	28 32.7	S 47 08.0
	09	62 03.7	1 14.8	48.4	263 44.7	11.9	115 20.0	45.3	122 41.5	50.6			Alnilam	276 26.5	S 1 13.6
	10	77 06.2	16 14.6	49.0	278 45.7	11.4	130 22.8	45.3	137 44.2	50.6			Alphard	218 34.9	S 8 29.5
	11	92 08.6	31 14.3	49.5	293 46.8	10.8	145 25.6	45.4	152 46.8	50.7					
	12	107 11.1	46 14.1	N17 50.1	308 47.9	N10 10.2	160 28.3	S19 45.5	167 49.5	S20 50.7			Alphecca	126 44.1	N 26 50.5
	13	122 13.5	61 13.8	50.7	323 48.9	09.6	175 31.1	45.6	182 52.1	50.7			Alpheratz	358 24.0	N 28 52.9
	14	137 16.0	76 13.6	51.2	338 50.0	09.0	190 33.9	45.6	197 54.8	50.8			Altair	62 46.2	N 8 46.0
	15	152 18.5	91 13.3	51.8	353 51.0	08.5	205 36.6	45.7	212 57.4	50.8			Ankaa	353 54.4	S 42 30.7
	16	167 20.9	106 13.1	52.4	8 52.1	07.9	220 39.4	45.8	228 00.1	50.9			Antares	113 14.2	S 26 20.8
	17	182 23.4	121 12.8	52.9	23 53.2	07.3	235 42.2	45.9	243 02.7	50.9					
	18	197 25.9	136 12.6	N17 53.5	38 54.2	N10 06.7	250 44.9	S19 46.0	258 05.4	S20 50.9			Arcturus	146 31.5	N 19 23.2
	19	212 28.3	151 12.4	54.0	53 55.3	06.1	265 47.7	46.0	273 08.0	51.0			Atria	108 50.8	S 68 57.6
	20	227 30.8	166 12.1	54.6	68 56.4	05.6	280 50.5	46.1	288 10.7	51.0			Avior	234 34.7	S 59 23.2
	21	242 33.3	181 11.9	55.2	83 57.4	05.0	295 53.2	46.2	303 13.4	51.0			Bellatrix	279 14.5	N 6 18.8
	22	257 35.7	196 11.6	55.7	98 58.5	04.4	310 56.0	46.3	318 16.0	51.1			Betelgeuse	271 44.1	N 7 24.0
23	272 38.2	211 11.4	56.3	113 59.5	03.8	325 58.8	46.3	333 18.7	51.1						
MONDAY	10 00	287 40.7	226 11.1	N17 56.8	129 00.6	N10 03.2	341 01.5	S19 46.4	348 21.3	S20 51.2			Canopus	264 14.1	S 52 40.5
	01	302 43.1	241 10.8	57.4	144 01.7	02.7	356 04.3	46.5	3 24.0	51.2			Capella	281 32.9	N 45 57.4
	02	317 45.6	256 10.6	58.0	159 02.7	02.1	11 07.1	46.6	18 26.6	51.2			Deneb	49 57.8	N 45 08.5
	03	332 48.0	271 10.3	58.5	174 03.8	01.5	26 09.9	46.7	33 29.3	51.3			Denebola	183 13.8	N 14 47.4
	04	347 50.5	286 10.1	59.1	189 04.8	00.9	41 12.6	46.7	48 31.9	51.3			Diphda	349 35.2	S 18 11.8
	05	2 53.0	301 09.8	17 59.6	204 05.9	10 00.3	56 15.4	46.8	63 34.6	51.4					
	06	17 55.4	316 09.6	N18 00.2	219 07.0	N 9 59.7	71 18.2	S19 46.9	78 37.2	S20 51.4			Dubhe	194 40.2	N 61 57.8
	07	32 57.9	331 09.3	00.7	234 08.0	59.2	86 20.9	47.0	93 39.9	51.4			Elinath	279 02.6	N 28 34.4
	08	48 00.4	346 09.1	01.3	249 09.1	58.6	101 23.7	47.0	108 42.5	51.5			Eltanin	91 03.9	N 51 29.8
	09	63 02.8	1 08.8	01.8	264 10.2	58.0	116 26.5	47.1	123 45.2	51.5			Enif	34 25.4	N 9 41.9
	10	78 05.3	16 08.5	02.4	279 11.2	57.4	131 29.2	47.2	138 47.8	51.6			Fomalhaut	16 07.1	S 29 49.4
	11	93 07.8	31 08.3	03.0	294 12.3	56.8	146 32.0	47.3	153 50.5	51.6					
	12	108 10.2	46 08.0	N18 03.5	309 13.3	N 9 56.2	161 34.8	S19 47.3	168 53.2	S20 51.6			Gacrux	172 44.7	S 56 54.1
	13	123 12.7	61 07.8	04.1	324 14.4	55.7	176 37.5	47.4	183 55.8	51.7			Gienah	176 32.8	S 17 19.7
	14	138 15.1	76 07.5	04.6	339 15.5	55.1	191 40.3	47.5	198 58.5	51.7			Hadar	149 43.5	S 60 11.4
	15	153 17.6	91 07.2	05.2	354 16.5	54.5	206 43.1	47.6	214 01.1	51.7			Hamal	328 45.2	N 23 16.7
	16	168 20.1	106 07.0	05.7	9 17.6	53.9	221 45.9	47.7	229 03.8	51.8			Kaus Aust.	84 35.5	S 34 24.1
	17	183 22.5	121 06.7	06.3	24 18.6	53.3	236 48.6	47.7	244 06.4	51.8					
	18	198 25.0	136 06.5	N18 06.8	39 19.7	N 9 52.7	251 51.4	S19 47.8	259 09.1	S20 51.9			Kochab	137 17.9	N 74 19.2
	19	213 27.5	151 06.2	07.4	54 20.8	52.2	266 54.2	47.9	274 11.7	51.9			Markab	14 17.3	N 14 59.8
	20	228 29.9	166 05.9	07.9	69 21.8	51.6	281 56.9	48.0	289 14.4	51.9			Menkar	314 56.3	N 3 56.3
	21	243 32.4	181 05.7	08.5	84 22.9	51.0	296 59.7	48.0	304 17.0	52.0			Menkent	148 53.8	S 36 10.9
	22	258 34.9	196 05.4	09.0	99 23.9	50.4	312 02.5	48.1	319 19.7	52.0			Miaplacidus	221 48.8	S 69 33.7
23	273 37.3	211 05.1	09.6	114 25.0	49.8	327 05.2	48.2	334 22.3	52.1						
TUESDAY	11 00	288 39.8	226 04.9	N18 10.1	129 26.1	N 9 49.2	342 08.0	S19 48.3	349 25.0	S20 52.1			Mirfak	309 36.9	N 49 43.2
	01	303 42.3	241 04.6	10.6	144 27.1	48.7	357 10.8	48.4	4 27.6	52.1			Nunki	76 46.6	S 26 20.6
	02	318 44.7	256 04.3	11.2	159 28.2	48.1	12 13.6	48.4	19 30.3	52.2			Peacock	54 20.5	S 56 51.4
	03	333 47.2	271 04.0	11.7	174 29.3	47.5	27 16.3	48.5	34 33.0	52.2			Pollux	244 16.1	N 28 07.2
	04	348 49.6	286 03.8	12.3	189 30.3	46.9	42 19.1	48.6	49 35.6	52.3			Procyon	245 41.2	N 5 19.4
	05	3 52.1	301 03.5	12.8	204 31.4	46.3	57 21.9	48.7	64 38.3	52.3					
	06	18 54.6	316 03.2	N18 13.4	219 32.4	N 9 45.7	72 24.6	S19 48.7	79 40.9	S20 52.3			Rasalhague	96 42.6	N 12 35.4
	07	33 57.0	331 03.0	13.9	234 33.5	45.1	87 27.4	48.8	94 43.6	52.4			Regulus	208 25.5	N 12 09.4
	08	48 59.5	346 02.7	14.5	249 34.6	44.6	102 30.2	48.9	109 46.2	52.4			Rigel	281 50.1	S 8 14.8
	09	64 02.0	1 02.4	15.0	264 35.6	44.0	117 33.0	49.0	124 48.9	52.5			Rigel Kent.	140 45.1	S 60 40.7
	10	79 04.4	16 02.1	15.5	279 36.7	43.4	132 35.7	49.1	139 51.5	52.5			Sabik	102 57.3	S 15 40.6
	11	94 06.9	31 01.9	16.1	294 37.7	42.8	147 38.5	49.1	154 54.2	52.5					
	12	109 09.4	46 01.6	N18 16.6	309 38.8	N 9 42.2	162 41.3	S19 49.2	169 56.8	S20 52.6			Schedar	350 25.2	N 56 19.3
	13	124 11.8	61 01.3	17.2	324 39.9	41.6	177 44.1	49.3	184 59.5	52.6			Shaula	97 14.9	S 37 04.6
	14	139 14.3	76 01.0	17.7	339 40.9	41.0	192 46.8	49.4	200 02.2	52.6			Sirius	259 08.7	S 16 39.8
	15	154 16.7	91 00.8	18.2	354 42.0	40.5	207 49.6	49.4	215 04.8	52.7			Spica	159 12.6	S 10 57.6
	16	169 19.2	106 00.5	18.8	9 43.0	39.9	222 52.4	49.5	230 07.5	52.7			Suhail	223 21.7	S 43 16.7
	17	184 21.7	121 00.2	19.3	24 44.1	39.3	237 55.2	49.6	245 10.1	52.8					
	18	199 24.1	135 59.9	N18 19.9	39 45.2	N 9 38.7	252 57.9	S19 49.7	260 12.8	S20 52.8			Vega	81 05.1	N 38 45.0
	19	214 26.6	150 59.6	20.4	54 46.2	38.1	268 00.7	49.8	275 15.4	52.8			Zuben'ubi	137 48.8	S 15 52.9
	20	229 29.1	165 59.4	20.9	69 47.3	37.5	283 03.5	49.8	290 18.1	52.9					
	21	244 31.5	180 59.1	21.5	84 48.3	36.9	298 06.3	49.9	305 20.7	52.9					
	22	259 34.0	195 58.8	22.0	99 49.4	36.4	313 09.0	50.0	320 23.4	53.0			Venus	298 30.4	8 55
23	274 36.5	210 58.5	22.6	114 50.5	35.8	328 11.8	50.1	335 26.0	53.0			Mars	201 19.9	15 23	
Mer. Pass. 4 48-5		v 0-3		d 0-6	v 1-1		d 0-6	v 2-8		d 0-1	v 2-7		d 0-0	Mer. Pass. h m	
														Saturn 60 40-6 0 46	

G.M.T.		SUN		MOON				Lat.	Twilight		Sun-rise	Moonrise					
		G.H.A.	Dec.	G.H.A.	<i>v</i>	Dec.	<i>d</i>		H.P.	Naut.		Civil	9	10	11	12	
d	h	°	'	°	'	°	'	'	°	h	m	h	m	h	m	h	m
SUNDAY	9 00	178 45.0	N22 25.0	224 14.4	11.4	N15 48.1	6.1	55.8	N 72	□	□	□	22 36	□	□	□	
	01	193 44.9	24.7	238 44.8	11.3	15 54.2	5.9	55.8	N 70	□	□	□	23 45	23 58	24 37	00 37	
	02	208 44.8	24.4	253 15.1	11.3	16 00.1	5.9	55.8	68	□	□	□	00 07	00 22	00 48	01 32	
	03	223 44.7	24.1	267 45.4	11.3	16 06.0	5.8	55.7	66	///	///	01 11	00 27	00 48	01 20	02 05	
	04	238 44.6	23.8	282 15.7	11.3	16 11.8	5.7	55.7	64	///	///	02 01	00 43	01 08	01 43	02 30	
	05	253 44.5	23.5	296 46.0	11.3	16 17.5	5.6	55.7	62	///	///	02 31	00 57	01 25	02 02	02 49	
	06	268 44.4	N22 23.3	311 16.3	11.3	N16 23.1	5.6	55.7	60	///	01 28	02 54	01 08	01 38	02 17	03 04	
	07	283 44.3	23.0	325 46.6	11.3	16 28.7	5.4	55.7	N 58	///	02 04	03 12	01 18	01 50	02 30	03 18	
	08	298 44.2	22.7	340 16.9	11.3	16 34.1	5.4	55.6	56	///	02 29	03 27	01 26	02 01	02 41	03 29	
	09	313 44.1	22.4	354 47.2	11.2	16 39.5	5.3	55.6	54	01 21	02 49	03 40	01 34	02 10	02 51	03 39	
	10	328 44.0	22.1	9 17.4	11.3	16 44.8	5.2	55.6	52	01 54	03 05	03 52	01 41	02 18	03 00	03 48	
	11	343 43.9	21.8	23 47.7	11.2	16 50.0	5.1	55.6	50	02 18	03 19	04 02	01 47	02 25	03 08	03 56	
	12	358 43.8	N22 21.5	38 17.9	11.2	N16 55.1	5.0	55.6	45	02 58	03 46	04 23	02 01	02 41	03 25	04 13	
	13	13 43.7	21.2	52 48.1	11.3	17 00.1	4.9	55.5	N 40	03 27	04 07	04 40	02 12	02 54	03 39	04 27	
	14	28 43.6	20.9	67 18.4	11.2	17 05.0	4.9	55.5	35	03 49	04 25	04 54	02 22	03 05	03 50	04 39	
	15	43 43.6	20.6	81 48.6	11.2	17 09.9	4.7	55.5	30	04 06	04 39	05 06	02 30	03 14	04 01	04 49	
	16	58 43.5	20.3	96 18.8	11.2	17 14.6	4.7	55.5	20	04 34	05 03	05 27	02 45	03 31	04 18	05 07	
	17	73 43.4	20.0	110 49.0	11.2	17 19.3	4.6	55.5	N 10	04 55	05 22	05 45	02 58	03 45	04 34	05 23	
	18	88 43.3	N22 19.7	125 19.2	11.2	N17 23.9	4.5	55.4	0	05 13	05 39	06 02	03 10	03 59	04 48	05 37	
	19	103 43.2	19.3	139 49.4	11.2	17 28.4	4.4	55.4	S 10	05 29	05 55	06 18	03 22	04 13	05 03	05 52	
	20	118 43.1	19.0	154 19.6	11.1	17 32.8	4.3	55.4	20	05 45	06 12	06 36	03 35	04 28	05 19	06 08	
	21	133 43.0	18.7	168 49.7	11.2	17 37.1	4.2	55.4	30	06 00	06 29	06 56	03 50	04 44	05 37	06 26	
	22	148 42.9	18.4	183 19.9	11.2	17 41.3	4.1	55.4	35	06 08	06 39	07 07	03 58	04 54	05 47	06 36	
	23	163 42.8	18.1	197 50.1	11.1	17 45.4	4.1	55.3	40	06 17	06 50	07 20	04 08	05 05	05 59	06 48	
00	178 42.7	N22 17.8	212 20.2	11.2	N17 49.5	3.9	55.3	45	06 26	07 03	07 36	04 20	05 18	06 12	07 02		
01	193 42.6	17.5	226 50.4	11.1	17 53.4	3.9	55.3	S 50	06 37	07 18	07 56	04 34	05 34	06 30	07 19		
02	208 42.5	17.2	241 20.5	11.2	17 57.3	3.7	55.3	52	06 42	07 25	08 05	04 41	05 42	06 38	07 27		
03	223 42.5	16.9	255 50.7	11.1	18 01.0	3.7	55.3	54	06 47	07 32	08 15	04 48	05 51	06 47	07 36		
04	238 42.4	16.6	270 20.8	11.2	18 04.7	3.6	55.2	56	06 53	07 41	08 26	04 56	06 00	06 57	07 46		
05	253 42.3	16.3	284 51.0	11.1	18 08.3	3.5	55.2	58	06 59	07 50	08 40	05 06	06 11	07 08	07 57		
06	268 42.2	N22 16.0	299 21.1	11.2	N18 11.8	3.4	55.2	S 60	07 05	08 01	08 56	05 16	06 23	07 22	08 10		
07	283 42.1	15.6	313 51.3	11.1	18 15.2	3.3	55.2	Lat.		Sun-set		Twilight		Moonset			
08	298 42.0	15.3	328 21.4	11.1	18 18.5	3.2	55.2	Civil		Naut.		9		10		11	
09	313 41.9	15.0	342 51.5	11.1	18 21.7	3.2	55.2	Naut.				10		11		12	
10	328 41.8	14.7	357 21.6	11.2	18 24.9	3.0	55.1	°	h	m	h	m	h	m	h	m	
11	343 41.7	14.4	11 51.8	11.1	18 27.9	2.9	55.1	N 72	□	□	□	20 48	□	□	□		
12	358 41.6	N22 14.1	26 21.9	11.1	N18 30.8	2.9	55.1	N 70	□	□	□	19 40	21 10	22 13	22 40		
13	13 41.6	13.8	40 52.0	11.2	18 33.7	2.7	55.1	68	□	□	□	19 04	20 20	21 18	21 55		
14	28 41.5	13.4	55 22.2	11.1	18 36.4	2.7	55.1	66	22 55	///	///	18 38	19 49	20 45	21 24		
15	43 41.4	13.1	69 52.3	11.1	18 39.1	2.6	55.1	64	22 08	///	///	18 18	19 25	20 20	21 02		
16	58 41.3	12.8	84 22.4	11.2	18 41.7	2.4	55.0	62	21 38	///	///	18 02	19 07	20 01	20 44		
17	73 41.2	12.5	98 52.6	11.1	18 44.1	2.4	55.0	60	21 15	22 40	///	17 49	18 52	19 46	20 29		
18	88 41.1	N22 12.2	113 22.7	11.1	N18 46.5	2.3	55.0	N 58	20 57	22 05	///	17 37	18 39	19 32	20 16		
19	103 41.0	11.8	127 52.8	11.2	18 48.8	2.2	55.0	56	20 42	21 40	///	17 27	18 28	19 21	20 05		
20	118 40.9	11.5	142 23.0	11.1	18 51.0	2.1	55.0	54	20 29	21 21	22 47	17 18	18 18	19 11	19 56		
21	133 40.9	11.2	156 53.1	11.2	18 53.1	2.0	55.0	52	20 18	21 05	22 15	17 10	18 09	19 02	19 47		
22	148 40.8	10.9	171 23.3	11.1	18 55.1	1.9	54.9	50	20 08	20 51	21 52	17 03	18 01	18 54	19 39		
23	163 40.7	10.6	185 53.4	11.2	18 57.0	1.8	54.9	45	19 47	20 24	21 11	16 48	17 45	18 36	19 23		
MONDAY	00	178 40.6	N22 10.2	200 23.6	11.1	N18 58.8	1.7	54.9	N 40	19 30	20 03	20 43	16 36	17 31	18 22	19 09	
	01	193 40.5	09.9	214 53.7	11.2	19 00.5	1.7	54.9	35	19 16	19 46	20 21	16 25	17 19	18 11	18 58	
	02	208 40.4	09.6	229 23.9	11.2	19 02.2	1.5	54.9	30	19 04	19 31	20 04	16 16	17 10	18 00	18 48	
	03	223 40.3	09.3	243 54.1	11.2	19 03.7	1.5	54.9	20	18 43	19 08	19 36	16 00	16 52	17 43	18 31	
	04	238 40.2	08.9	258 24.3	11.2	19 05.2	1.3	54.8	N 10	18 26	18 48	19 15	15 46	16 37	17 27	18 15	
	05	253 40.2	08.6	272 54.5	11.1	19 06.5	1.3	54.8	0	18 09	18 31	18 57	15 33	16 23	17 12	18 01	
	06	268 40.1	N22 08.3	287 24.6	11.3	N19 07.8	1.1	54.8	S 10	17 52	18 15	18 41	15 20	16 09	16 58	17 47	
	07	283 40.0	07.9	301 54.9	11.2	19 08.9	1.1	54.8	20	17 35	17 59	18 26	15 07	15 53	16 42	17 31	
	08	298 39.9	07.6	316 25.1	11.2	19 10.0	0.9	54.8	30	17 15	17 41	18 11	14 51	15 36	16 24	17 14	
	09	313 39.8	07.3	330 55.3	11.2	19 10.9	0.9	54.8	35	17 04	17 31	18 03	14 42	15 26	16 13	17 03	
	10	328 39.7	07.0	345 25.5	11.3	19 11.8	0.8	54.8	40	16 50	17 20	17 54	14 31	15 15	16 02	16 52	
	11	343 39.6	06.6	359 55.8	11.2	19 12.6	0.7	54.7	45	16 35	17 08	17 44	14 19	15 01	15 47	16 38	
	12	358 39.6	N22 06.3	14 26.0	11.3	N19 13.3	0.6	54.7	S 50	16 15	16 53	17 34	14 04	14 44	15 30	16 21	
	13	13 39.5	06.0	28 56.3	11.3	19 13.9	0.5	54.7	52	16 06	16 46	17 29	13 57	14 37	15 22	16 13	
	14	28 39.4	05.6	43 26.6	11.2	19 14.4	0.4	54.7	54	15 56	16 38	17 24	13 50	14 28	15 13	16 04	
	15	43 39.3	05.3	57 56.8	11.3	19 14.8	0.3	54.7	56	15 44	16 30	17 18	13 41	14 18	15 03	15 54	
	16	58 39.2	05.0	72 27.1	11.4	19 15.1	0.2	54.7	58	15 31	16 21	17 12	13 31	14 07	14 51	15 43	
	17	73 39.1	04.6	86 57.5	11.3	19 15.3	0.2	54.7	S 60	15 15	16 10	17 06	13 20	13 55	14 38	15 29	
	18	88 39.1	N22 04.3	101 27.8	11.3	N19 15.5	0.0	54.6	Day		SUN		MOON				
	19	103 39.0	03.9	115 58.1	11.4	19 15.5	0.1	54.6	Eqn. of Time		Mer. Pass.		Mer. Upper		Pass. Lower		Age
	20	118 38.9	03.6	130 28.5	11.4	19 15.4	0.1	54.6	00h		12h						Phase
	21	133 38.8	03.3	144 58.9	11.4	19 15.3	0.3	54.6	m	s	m	s	h	m	h	m	d
	22	148 38.7	02.9														

		ARIES		VENUS -3.7		MARS +1.8		JUPITER -2.3		SATURN +0.3		STARS			
G.M.T.		G.H.A.		G.H.A. Dec.		G.H.A. Dec.		G.H.A. Dec.		G.H.A. Dec.		Name		S.H.A. Dec.	
WEDNESDAY	d h														
	m														
	12 00	289 38.9	225 58.2	N 18 23.1	129 51.5	N 9 35.2	343 14.6	S 19 50.2	350 28.7	S 20 53.0	Acamar	315 48.3	S 40 27.4		
	01	304 41.4	240 57.9	23.6	144 52.6	34.6	358 17.4	50.2	5 31.4	53.1	Achernar	335 56.1	S 57 25.7		
	02	319 43.9	255 57.7	24.2	159 53.7	34.0	13 20.1	50.3	20 34.0	53.1	Acrux	173 53.3	S 62 53.4		
	03	334 46.3	270 57.4	24.7	174 54.7	33.4	28 22.9	50.4	35 36.7	53.2	Adhara	255 43.8	S 28 55.2		
	04	349 48.8	285 57.1	25.2	189 55.8	32.8	43 25.7	50.5	50 39.3	53.2	Aldebaran	291 34.7	N 16 25.8		
	05	4 51.2	300 56.8	25.8	204 56.8	32.2	58 28.5	50.5	65 42.0	53.2					
	06	19 53.7	315 56.5	N 18 26.3	219 57.9	N 9 31.7	73 31.2	S 19 50.6	80 44.6	S 20 53.3	Alioth	166 55.2	N 56 10.5		
	07	34 56.2	330 56.2	26.8	234 59.0	31.1	88 34.0	50.7	95 47.3	53.3	Alkaid	153 29.8	N 49 30.7		
	08	49 58.6	345 55.9	27.3	250 00.0	30.5	103 36.8	50.8	110 49.9	53.4	Al Na'ir	28 32.7	S 47 08.1		
	09	65 01.1	0 55.6	27.9	265 01.1	29.9	118 39.6	50.9	125 52.6	53.4	Alnilam	276 26.5	S 1 13.6		
	10	80 03.6	15 55.3	28.4	280 02.1	29.3	133 42.3	50.9	140 55.2	53.4	Alphard	218 34.9	S 8 29.5		
	11	95 06.0	30 55.1	28.9	295 03.2	28.7	148 45.1	51.0	155 57.9	53.5					
	12	110 08.5	45 54.8	N 18 29.5	310 04.3	N 9 28.1	163 47.9	S 19 51.1	171 00.6	S 20 53.5	Alphecca	126 44.1	N 26 50.9		
	13	125 11.0	60 54.5	30.0	325 05.3	27.5	178 50.7	51.2	186 03.2	53.5	Alpheratz	358 24.0	N 28 52.5		
	14	140 13.4	75 54.2	30.5	340 06.4	26.9	193 53.4	51.3	201 05.9	53.6	Altair	62 46.2	N 8 46.1		
	15	155 15.9	90 53.9	31.0	355 07.4	26.4	208 56.2	51.3	216 08.5	53.6	Ankaa	353 54.4	S 42 30.7		
	16	170 18.4	105 53.6	31.6	10 08.5	25.8	223 59.0	51.4	231 11.2	53.7	Antares	113 14.2	S 26 20.8		
	17	185 20.8	120 53.3	32.1	25 09.6	25.2	239 01.8	51.5	246 13.8	53.7					
	18	200 23.3	135 53.0	N 18 32.6	40 10.6	N 9 24.6	254 04.6	S 19 51.6	261 16.5	S 20 53.7	Arcturus	146 31.5	N 19 23.2		
	19	215 25.7	150 52.7	33.2	55 11.7	24.0	269 07.3	51.6	276 19.1	53.8	Atria	108 50.8	S 68 57.6		
	20	230 28.2	165 52.4	33.7	70 12.7	23.4	284 10.1	51.7	291 21.8	53.8	Avior	234 34.7	S 59 23.2		
	21	245 30.7	180 52.1	34.2	85 13.8	22.8	299 12.9	51.8	306 24.5	53.9	Bellatrix	279 14.4	N 6 18.9		
22	260 33.1	195 51.8	34.7	100 14.9	22.2	314 15.7	51.9	321 27.1	53.9	Betelgeuse	271 44.1	N 7 24.0			
23	275 35.6	210 51.5	35.2	115 15.9	21.6	329 18.4	52.0	336 29.8	53.9						
THURSDAY	13 00	290 38.1	225 51.2	N 18 35.8	130 17.0	N 9 21.0	344 21.2	S 19 52.0	351 32.4	S 20 54.0	Canopus	264 14.1	S 52 40.5		
	01	305 40.5	240 50.9	36.3	145 18.0	20.5	359 24.0	52.1	6 35.1	54.0	Capella	281 32.9	N 45 57.4		
	02	320 43.0	255 50.6	36.8	160 19.1	19.9	14 26.8	52.2	21 37.7	54.1	Deneb	49 57.8	N 45 08.5		
	03	335 45.5	270 50.3	37.3	175 20.2	19.3	29 29.6	52.3	36 40.4	54.1	Denebola	183 13.8	N 14 47.4		
	04	350 47.9	285 50.0	37.9	190 21.2	18.7	44 32.3	52.4	51 43.0	54.1	Diphda	349 35.2	S 18 11.8		
	05	5 50.4	300 49.7	38.4	205 22.3	18.1	59 35.1	52.4	66 45.7	54.2					
	06	20 52.9	315 49.4	N 18 38.9	220 23.3	N 9 17.5	74 37.9	S 19 52.5	81 48.4	S 20 54.2	Dubhe	194 40.3	N 61 57.8		
	07	35 55.3	330 49.1	39.4	235 24.4	16.9	89 40.7	52.6	96 51.0	54.2	Elmath	279 02.6	N 28 34.4		
	08	50 57.8	345 48.8	39.9	250 25.5	16.3	104 43.5	52.7	111 53.7	54.3	Eltanin	91 03.9	N 51 29.8		
	09	66 00.2	0 48.5	40.0	265 26.5	15.7	119 46.2	52.8	126 56.3	54.3	Enif	34 25.4	N 9 41.9		
	10	81 02.7	15 48.2	41.4	280 27.6	15.1	134 49.0	52.8	141 59.0	54.4	Fomalhaut	16 07.1	S 29 49.4		
	11	96 05.2	30 47.9	41.5	295 28.6	14.5	149 51.8	52.9	157 01.6	54.4					
	12	111 07.6	45 47.6	N 18 42.0	310 29.7	N 9 14.0	164 54.6	S 19 53.0	172 04.3	S 20 54.4	Gacrux	172 44.8	S 56 54.1		
	13	126 10.1	60 47.3	42.5	325 30.8	13.4	179 57.4	53.1	187 06.9	54.5	Gienah	176 32.8	S 17 19.7		
	14	141 12.6	75 46.9	43.0	340 31.8	12.8	195 00.1	53.1	202 09.6	54.5	Hadar	149 43.5	S 60 11.4		
	15	156 15.0	90 46.6	43.5	355 32.9	12.2	210 02.9	53.2	217 12.3	54.6	Hamal	328 45.2	N 23 16.7		
	16	171 17.5	105 46.3	44.0	10 33.9	11.6	225 05.7	53.3	232 14.9	54.6	Kaus Aust.	84 35.5	S 34 24.1		
	17	186 20.0	120 46.0	44.6	25 35.0	11.0	240 08.5	53.4	247 17.6	54.6					
	18	201 22.4	135 45.7	N 18 45.1	40 36.0	N 9 10.4	255 11.3	S 19 53.5	262 20.2	S 20 54.7	Kochab	137 17.9	N 74 19.2		
	19	216 24.9	150 45.4	45.6	55 37.1	09.8	270 14.0	53.5	277 22.9	54.7	Markab	14 17.3	N 14 59.8		
	20	231 27.4	165 45.1	46.1	70 38.2	09.2	285 16.8	53.6	292 25.5	54.8	Menkar	314 56.3	N 3 56.3		
	21	246 29.8	180 44.8	46.6	85 39.2	08.6	300 19.6	53.7	307 28.2	54.8	Menkent	148 53.8	S 36 10.9		
	22	261 32.3	195 44.5	47.1	100 40.3	08.0	315 22.4	53.8	322 30.8	54.8	Miaplacidus	221 48.8	S 69 33.7		
	23	276 34.7	210 44.1	47.6	115 41.3	07.4	330 25.2	53.9	337 33.5	54.9					
FRIDAY	14 00	291 37.2	225 43.8	N 18 48.1	130 42.4	N 9 06.9	345 27.9	S 19 53.9	352 36.2	S 20 54.9	Mirfak	309 36.9	N 49 43.2		
	01	306 39.7	240 43.5	48.6	145 43.5	06.3	0 30.7	54.0	7 38.8	54.9	Nunki	76 46.6	S 26 20.6		
	02	321 42.1	255 43.2	49.1	160 44.5	05.7	15 33.5	54.1	22 41.5	55.0	Peacock	54 20.5	S 56 51.4		
	03	336 44.6	270 42.9	49.7	175 45.6	05.1	30 36.3	54.2	37 44.1	55.0	Pollux	244 16.1	N 28 07.2		
	04	351 47.1	285 42.6	50.2	190 46.6	04.5	45 39.1	54.2	52 46.8	55.1	Procyon	245 41.2	N 5 19.4		
	05	6 49.5	300 42.2	50.7	205 47.7	03.9	60 41.8	54.3	67 49.4	55.1					
	06	21 52.0	315 41.9	N 18 51.2	220 48.8	N 9 03.3	75 44.6	S 19 54.4	82 52.1	S 20 55.1	Rasalhague	96 42.6	N 12 35.4		
	07	36 54.5	330 41.6	51.7	235 49.8	02.7	90 47.4	54.5	97 54.8	55.2	Regulus	208 25.5	N 12 09.4		
	08	51 56.9	345 41.3	52.2	250 50.9	02.1	105 50.2	54.6	112 57.4	55.2	Rigel	281 50.1	S 8 14.8		
	09	66 59.4	0 41.0	52.7	265 51.9	01.5	120 53.0	54.6	128 00.1	55.3	Rigel Kent.	140 45.2	S 60 40.7		
	10	82 01.8	15 40.6	53.2	280 53.0	00.9	135 55.8	54.7	143 02.7	55.3	Sabik	102 57.3	S 15 40.6		
	11	97 04.3	30 40.3	53.7	295 54.1	9 00.3	150 58.5	54.8	158 05.4	55.3					
	12	112 06.8	45 40.0	N 18 54.2	310 55.1	N 8 59.7	166 01.3	S 19 54.9	173 08.0	S 20 55.4	Schedar	350 25.2	N 56 19.3		
	13	127 09.2	60 39.7	54.7	325 56.2	59.1	181 04.1	55.0	188 10.7	55.4	Shaula	97 14.9	S 37 04.6		
	14	142 11.7	75 39.3	55.2	340 57.2	58.5	196 06.9	55.0	203 13.3	55.5	Sirius	259 08.7	S 16 39.8		
	15	157 14.2	90 39.0	55.7	355 58.3	57.9	211 09.7	55.1	218 16.0	55.5	Spica	159 12.6	N 10 57.6		
	16	172 16.6	105 38.7	56.2	10 59.4	57.3	226 12.4	55.2	233 18.7	55.5	Suhail	223 21.7	S 43 16.7		
	17	187 19.1	120 38.4	56.7	26 00.4	56.8	241 15.2	55.3	248 21.3	55.6					
	18	202 21.6	135 38.0	N 18 57.2	41 01.5	N 8 56.2	256 18.0	S 19 55.4	263 24.0	S 20 55.6	Vega	81 05.1	N 38 45.0		
	19	217 24.0	150 37.7	57.7	56 02.5	55.6	271 20.8	55.4	278 26.6	55.7	Zuben'ubi	137 48.8	S 15 52.9		
	20	232 26.5	165 37.4	58.2	71 03.6	55.0	286 23.6	55.5	293 29.3	55.7					
	21	247 29.0	180 37.0	58.7	86 04.6	54.4	301 26.4	55.6	308 31.9	55.7					
	22	262 31.4	195 36.7	59.2	101 05.7	53.8	316 29.1	55.7	323 34.6	55.8					
	23	277 33.9	210 36.4	59.7	116 06.8	53.2	331 31.9	55.8	338 37.3	55.8					
Mer. Pass.		h 4 36.7	m v -0.3	d 0.5	v 1.1	d 0.6	v 2.8	d 0.1	v 2.7	d 0.0					
											S.H.A.		Mer. Pass.		
											Venus		h 8 57		
											Mars		h 15 18		
											Jupiter		h 1 02		
											Saturn		h 0 34		

G.M.T.	SUN				MOON				Lat.	Twilight		Sun-rise	Moonrise						
	G.H.A.		Dec.	H.P.	G.H.A.		Dec.	d		Naut.	Civil		12	13	14	15			
	°	'			°	'											°	'	
12 00	178	38.6	N22	02.3	188	30.1	11.4	N19	14.3	0.5	54.6	N 72	□	□	□	□	□	02 27	04 22
01	193	38.5		01.9	203	00.5	11.5		19	13.8	0.7	54.6	N 70	□	□	□	□	01 32	02 36
02	208	38.4		01.6	217	31.0	11.4		19	13.1	0.7	54.5	68	□	□	□	□	01 32	02 36
03	223	38.3		01.2	232	01.4	11.5		19	12.4	0.8	54.5	66	□	□	□	□	02 05	03 06
04	238	38.2		00.9	246	31.9	11.6		19	11.6	0.9	54.5	64	□	□	□	□	02 30	03 28
05	253	38.1		00.5	261	02.5	11.5		19	10.7	0.9	54.5	62	□	□	□	□	02 49	03 46
06	268	38.1	N22	00.2	275	33.0	11.5	N19	09.8	1.1	54.5	N 58	□	□	□	□	03 04	04 01	
07	283	38.0	21	59.9	290	03.5	11.6		19	08.7	1.2	54.5	56	□	□	□	□	04 13	05 14
08	298	37.9		59.5	304	34.1	11.6		19	07.5	1.2	54.5	54	□	□	□	□	05 24	06 24
09	313	37.8		59.2	319	04.7	11.6		19	06.3	1.4	54.5	52	□	□	□	□	06 32	07 32
10	328	37.7		58.8	333	35.3	11.7		19	04.9	1.4	54.4	50	□	□	□	□	07 40	08 40
11	343	37.7		58.5	348	06.0	11.6		19	03.5	1.5	54.4	45	□	□	□	□	08 48	09 48
12	358	37.6	N21	58.1	2	36.6	11.7	N19	02.0	1.7	54.4	N 40	□	□	□	□	09 56	10 56	
13	13	37.5		57.8	17	07.3	11.7		19	00.3	1.7	54.4	35	□	□	□	□	11 04	12 04
14	28	37.4		57.4	31	38.0	11.7		18	58.6	1.7	54.4	30	□	□	□	□	12 12	13 12
15	43	37.3		57.1	46	08.7	11.8		18	56.9	1.9	54.4	20	□	□	□	□	13 20	14 20
16	58	37.3		56.7	60	39.5	11.8		18	55.0	2.0	54.4	N 10	□	□	□	□	14 28	15 28
17	73	37.2		56.4	75	10.3	11.8		18	53.0	2.1	54.4	0	□	□	□	□	15 36	16 36
18	88	37.1	N21	56.0	89	41.1	11.8	N18	50.9	2.1	54.4	S 10	□	□	□	□	16 44	17 44	
19	103	37.0		55.7	104	11.9	11.8		18	48.8	2.2	54.3	20	□	□	□	□	17 52	18 52
20	118	36.9		55.3	118	42.7	11.9		18	46.6	2.4	54.3	30	□	□	□	□	19 00	20 00
21	133	36.9		55.0	133	13.6	11.9		18	44.2	2.4	54.3	35	□	□	□	□	20 08	21 08
22	148	36.8		54.6	147	44.5	12.0		18	41.8	2.5	54.3	40	□	□	□	□	21 16	22 16
23	163	36.7		54.3	162	15.5	11.9		18	39.3	2.6	54.3	45	□	□	□	□	22 24	23 24
13 00	178	36.6	N21	53.9	176	46.4	12.0	N18	36.7	2.6	54.3	S 50	□	□	□	□	23 32	24 32	
01	193	36.6		53.5	191	17.4	12.0		18	34.1	2.8	54.3	52	□	□	□	□	24 40	25 40
02	208	36.5		53.2	205	48.4	12.1		18	31.3	2.8	54.3	54	□	□	□	□	25 48	26 48
03	223	36.4		52.8	220	19.5	12.0		18	28.5	2.9	54.3	56	□	□	□	□	26 56	27 56
04	238	36.3		52.5	234	50.5	12.1		18	25.6	3.1	54.3	58	□	□	□	□	27 04	28 04
05	253	36.2		52.1	249	21.6	12.2		18	22.5	3.0	54.3	S 60	□	□	□	□	28 12	29 12
06	268	36.2	N21	51.8	263	52.8	12.1	N18	19.5	3.2	54.2								
07	283	36.1		51.4	278	23.9	12.2		18	16.3	3.3	54.2							
08	298	36.0		51.0	292	55.1	12.2		18	13.0	3.3	54.2							
09	313	35.9		50.7	307	26.3	12.3		18	09.7	3.5	54.2							
10	328	35.9		50.3	321	57.6	12.2		18	06.2	3.5	54.2							
11	343	35.8		50.0	336	28.8	12.4		18	02.7	3.6	54.2							
12	358	35.7	N21	49.6	351	00.2	12.3	N17	59.1	3.6	54.2								
13	13	35.6		49.2	5	31.5	12.4		17	55.5	3.8	54.2							
14	28	35.6		48.9	20	02.9	12.4		17	51.7	3.8	54.2							
15	43	35.5		48.5	34	34.3	12.4		17	47.9	3.9	54.2							
16	58	35.4		48.1	49	05.7	12.5		17	44.0	4.0	54.2							
17	73	35.3		47.8	63	37.2	12.5		17	40.0	4.1	54.2							
18	88	35.3	N21	47.4	78	08.7	12.5	N17	35.9	4.1	54.1								
19	103	35.2		47.0	92	40.2	12.6		17	31.8	4.3	54.1							
20	118	35.1		46.7	107	11.8	12.6		17	27.5	4.3	54.1							
21	133	35.1		46.3	121	43.4	12.6		17	23.2	4.4	54.1							
22	148	35.0		45.9	136	15.0	12.7		17	18.8	4.4	54.1							
23	163	34.9		45.6	150	46.7	12.7		17	14.4	4.6	54.1							
14 00	178	34.8	N21	45.2	165	18.4	12.7	N17	09.8	4.6	54.1	N 40	□	□	□	□	23 40	24 40	
01	193	34.8		44.8	179	50.1	12.8		17	05.2	4.7	54.1	35	□	□	□	□	24 48	25 48
02	208	34.7		44.4	194	21.9	12.7		17	00.5	4.7	54.1	30	□	□	□	□	25 56	26 56
03	223	34.6		44.1	208	53.6	12.9		16	55.8	4.9	54.1	20	□	□	□	□	26 04	27 04
04	238	34.5		43.7	223	25.5	12.8		16	50.9	4.9	54.1	N 10	□	□	□	□	27 12	28 12
05	253	34.5		43.3	237	57.3	12.9		16	46.0	5.0	54.1	0	□	□	□	□	28 20	29 20
06	268	34.4	N21	42.9	252	29.2	13.0	N16	41.0	5.0	54.1	S 10	□	□	□	□	29 28	30 28	
07	283	34.3		42.6	267	01.2	12.9		16	36.0	5.2	54.1	20	□	□	□	□	30 36	31 36
08	298	34.3		42.2	281	33.1	13.0		16	30.8	5.2	54.1	30	□	□	□	□	31 44	32 44
09	313	34.2		41.8	296	05.1	13.1		16	25.6	5.3	54.1	35	□	□	□	□	32 52	33 52
10	328	34.1		41.4	310	37.2	13.0		16	20.3	5.3	54.1	40	□	□	□	□	33 00	34 00
11	343	34.0		41.1	325	09.2	13.1		16	15.0	5.4	54.1	45	□	□	□	□	34 08	35 08
12	358	34.0	N21	40.7	339	41.3	13.2	N16	09.6	5.5	54.0	S 50	□	□	□	□	35 16	36 16	
13	13	33.9		40.3	354	13.5	13.1		16	04.1	5.6	54.0	52	□	□	□	□	36 24	37 24
14	28	33.8		39.9	8	45.6	13.2		15	58.5	5.6	54.0	54	□	□	□	□	37 32	38 32
15	43	33.8		39.5	23	17.8	13.3		15	52.9	5.7	54.0	56	□	□	□	□	38 40	39 40
16	58	33.7		39.2	37	50.1	13.3		15	47.2	5.8	54.0	58	□	□	□	□	39 48	40 48
17	73	33.6		38.8	52	22.4	13.3		15	41.4	5.8	54.0	S 60	□	□	□	□	40 56	41 56
18	88	33.6	N21	38.4	66	54.7	13.3	N15	35.6	5.9	54.0								
19	103	33.5		38.0	81	27.0	13.4		15	29.7	6.0	54.0							
20	118	33.4		37.6	95	59.4	13.4		15	23.7	6.0	54.0							
21	133	33.4		37.2	110	31.8	13.4		15	17.7	6.1	54.0							
22	148	33.3		36.9	125	04.2	13.5		15	11.6	6.2	54.0							
23	163	33.2		36.5	139	36.7	13.5		15	05.4	6.2	54.0							
	S.D.	15-8	d	0-4	S.D.	14-8	14-8		14-7										

		ARIES		VENUS -3·7		MARS +1·8		JUPITER -2·3		SATURN +0·3		STARS			
G.M.T.		G.H.A.		G.H.A. Dec.		G.H.A. Dec.		G.H.A. Dec.		G.H.A. Dec.		Name		S.H.A. Dec.	
d	h														
15	00	292 36·3	225 36·1 N 19 00·2	131 07·8 N 8 52·6	346 34·7 S 19 55·8	353 39·9 S 20 55·9	Acamar	315 48·3	S 40 27·4						
	01	307 38·8	240 35·7 00·7	146 08·9 52·0	1 37·5 55·9	8 42·6 55·9	Achernar	335 56·1	S 57 25·7						
	02	322 41·3	255 35·4 01·2	161 09·9 51·4	16 40·3 56·0	23 45·2 55·9	Acrux	173 53·3	S 62 53·4						
	03	337 43·7	270 35·1 .. 01·7	176 11·0 .. 50·8	31 43·1 .. 56·1	38 47·9 .. 56·0	Adhara	255 43·8	S 28 55·2						
	04	352 46·2	285 34·7 02·1	191 12·1 50·2	46 45·9 56·2	53 50·5 56·0	Aldebaran	291 34·7	N 16 25·8						
05	7 48·7	300 34·4 02·6	206 13·1 49·6	61 48·6 56·2	68 53·2 56·0										
SATURDAY	06	22 51·1	315 34·1 N 19 03·1	221 14·2 N 8 49·0	76 51·4 S 19 56·3	83 55·8 S 20 56·1	Alioth	166 55·3	N 56 10·5						
	07	37 53·6	330 33·7 03·6	236 15·2 48·4	91 54·2 56·4	98 58·5 56·1	Alkaid	153 29·8	N 49 30·7						
	08	52 56·1	345 33·4 04·1	251 16·3 47·8	106 57·0 56·5	114 01·2 56·2	Al Na'ir	28 32·6	S 47 08·1						
	09	67 58·5	0 33·1 .. 04·6	266 17·4 .. 47·2	121 59·8 .. 56·5	129 03·8 .. 56·2	Alnilam	276 26·5	S 1 13·6						
	10	83 01·0	15 32·7 05·1	281 18·4 46·6	137 02·6 56·6	144 06·5 56·2	Alphard	218 34·9	S 8 29·5						
11	98 03·5	30 32·4 05·6	296 19·5 46·0	152 05·3 56·7	159 09·1 56·3										
	12	113 05·9	45 32·0 N 19 06·1	311 20·5 N 8 45·4	167 08·1 S 19 56·8	174 11·8 S 20 56·3	Alphecca	126 44·1	N 26 50·9						
	13	128 08·4	60 31·7 06·6	326 21·6 44·8	182 10·9 56·9	189 14·4 56·4	Alpheratz	358 24·0	N 28 52·5						
	14	143 10·8	75 31·4 07·0	341 22·7 44·2	197 13·7 56·9	204 17·1 56·4	Altair	62 46·2	N 8 46·1						
	15	158 13·3	90 31·0 .. 07·5	356 23·7 .. 43·6	212 16·5 .. 57·0	219 19·8 .. 56·4	Ankaa	353 54·3	S 42 30·7						
	16	173 15·8	105 30·7 08·0	11 24·8 43·0	227 19·3 57·1	234 22·4 56·5	Antares	113 14·2	S 26 20·8						
17	188 18·2	120 30·3 08·5	26 25·8 42·4	242 22·1 57·2	249 25·1 56·5										
	18	203 20·7	135 30·0 N 19 09·0	41 26·9 N 8 41·8	257 24·8 S 19 57·3	264 27·7 S 20 56·6	Arcturus	146 31·5	N 19 23·2						
	19	218 23·2	150 29·7 09·5	56 27·9 41·2	272 27·6 57·3	279 30·4 56·6	Atria	108 50·8	S 68 57·6						
	20	233 25·6	165 29·3 09·9	71 29·0 40·7	287 30·4 57·4	294 33·0 56·6	Avior	234 34·7	S 59 23·2						
	21	248 28·1	180 29·0 .. 10·4	86 30·1 .. 40·1	302 33·2 .. 57·5	309 35·7 .. 56·7	Bellatrix	279 14·4	N 6 18·9						
	22	263 30·6	195 28·6 10·9	101 31·1 39·5	317 36·0 57·6	324 38·4 56·7	Betelgeuse	271 44·1	N 7 24·0						
23	278 33·0	210 28·3 11·4	116 32·2 38·9	332 38·8 57·7	339 41·0 56·7										
16	00	293 35·5	225 27·9 N 19 11·9	131 33·2 N 8 38·3	347 41·6 S 19 57·7	354 43·7 S 20 56·8	Canopus	264 14·1	S 52 40·5						
	01	308 37·9	240 27·6 12·4	146 34·3 37·7	2 44·4 57·8	9 46·3 56·8	Capella	281 32·9	N 45 57·4						
	02	323 40·4	255 27·2 12·8	161 35·4 37·1	17 47·1 57·9	24 49·0 56·9	Deneb	49 57·7	N 45 08·5						
	03	338 42·9	270 26·9 .. 13·3	176 36·4 .. 36·5	32 49·9 .. 58·0	39 51·6 .. 56·9	Denebola	183 13·8	N 14 47·4						
	04	353 45·3	285 26·5 13·8	191 37·5 35·9	47 52·7 58·1	54 54·3 56·9	Diphda	349 35·2	S 18 11·8						
05	8 47·8	300 26·2 14·3	206 38·5 35·3	62 55·5 58·1	69 57·0 57·0										
SUNDAY	06	23 50·3	315 25·8 N 19 14·7	221 39·6 N 8 34·7	77 58·3 S 19 58·2	84 59·6 S 20 57·0	Dubhe	194 40·3	N 61 57·8						
	07	38 52·7	330 25·5 15·2	236 40·6 34·1	93 01·1 58·3	100 02·3 57·1	Elnach	279 02·6	N 28 34·4						
	08	53 55·2	345 25·1 15·7	251 41·7 33·5	108 03·9 58·4	115 04·9 57·1	Eltanin	91 03·9	N 51 29·8						
	09	68 57·7	0 24·8 .. 16·2	266 42·8 .. 32·9	123 06·7 .. 58·5	130 07·6 .. 57·1	Enif	34 25·4	N 9 41·9						
	10	84 00·1	15 24·4 16·6	281 43·3 32·3	138 09·4 58·5	145 10·2 57·2	Fomalhaut	16 07·0	S 29 49·4						
11	99 02·6	30 24·1 17·1	296 44·9 31·7	153 12·2 58·6	160 12·9 57·2										
	12	114 05·1	45 23·7 N 19 17·6	311 45·9 N 8 31·1	168 15·0 S 19 58·7	175 15·6 S 20 57·3	Gacrux	172 44·8	S 56 54·1						
	13	129 07·5	60 23·4 18·1	326 47·0 30·5	183 17·8 58·8	190 18·2 57·3	Gienah	176 32·8	S 17 19·7						
	14	144 10·0	75 23·0 18·5	341 48·1 29·9	198 20·6 58·8	205 20·9 57·3	Hadar	149 43·5	S 60 11·4						
	15	159 12·4	90 22·7 .. 19·0	356 49·1 .. 29·3	213 23·4 .. 58·9	220 23·5 .. 57·4	Hamal	328 45·2	N 23 16·7						
	16	174 14·9	105 22·3 19·5	11 50·2 28·7	228 26·2 59·0	235 26·2 57·4	Kaus Aust.	84 35·5	S 34 24·1						
17	189 17·4	120 22·0 19·9	26 51·2 28·1	243 29·0 59·1	250 28·8 57·5										
	18	204 19·8	135 21·6 N 19 20·4	41 52·3 N 8 27·5	258 31·7 S 19 59·2	265 31·5 S 20 57·5	Kochab	137 18·0	N 74 19·2						
	19	219 22·3	150 21·2 20·9	56 53·3 26·9	273 34·5 59·2	280 34·2 57·5	Markab	14 17·3	N 14 59·8						
	20	234 24·8	165 20·9 21·4	71 54·4 26·3	288 37·3 59·3	295 36·8 57·6	Menkar	314 56·3	N 3 56·3						
	21	249 27·2	180 20·5 .. 21·8	86 55·5 .. 25·7	303 40·1 .. 59·4	310 39·5 .. 57·6	Menkent	148 53·8	S 36 10·9						
	22	264 29·7	195 20·2 22·3	101 56·5 25·1	318 42·9 59·5	325 42·1 57·7	Miaplacidus	221 48·8	S 69 33·7						
23	279 32·2	210 19·8 22·8	116 57·6 24·5	333 45·7 59·6	340 44·8 57·7										
17	00	294 34·6	225 19·4 N 19 23·2	131 58·6 N 8 23·9	348 48·5 S 19 59·6	355 47·4 S 20 57·7	Mirfak	309 36·8	N 49 43·3						
	01	309 37·1	240 19·1 23·7	146 59·7 23·3	3 51·3 59·7	10 50·1 57·8	Nunki	76 46·6	S 26 20·6						
	02	324 39·6	255 18·7 24·1	162 00·7 22·7	18 54·1 59·8	25 52·8 57·8	Peacock	54 20·5	S 56 51·4						
	03	339 42·0	270 18·4 .. 24·6	177 01·8 .. 22·1	33 56·8 19 59·9	40 55·4 .. 57·8	Pollux	244 16·1	N 28 07·2						
	04	354 44·5	285 18·0 25·1	192 02·9 21·5	48 59·6 20 00·0	55 58·1 57·9	Procyon	245 41·2	N 5 19·4						
05	9 46·9	300 17·6 25·5	207 03·9 20·9	64 02·4 00·0	71 00·7 57·9										
	06	24 49·4	315 17·3 N 19 26·0	222 05·0 N 8 20·3	79 05·2 S 20 00·1	86 03·4 S 20 58·0	Rasalhague	96 42·6	N 12 35·4						
	07	39 51·9	330 16·9 26·5	237 06·0 19·7	94 08·0 00·2	101 06·1 58·0	Regulus	208 25·5	N 12 09·4						
	08	54 54·3	345 16·5 26·9	252 07·1 19·1	109 10·8 00·3	116 08·7 58·0	Rigel	281 50·1	S 8 14·7						
	09	69 56·8	0 16·2 .. 27·4	267 08·2 .. 18·4	124 13·6 .. 00·4	131 11·4 .. 58·1	Rigel Kent.	140 45·2	S 60 40·7						
	10	84 59·3	15 15·8 27·8	282 09·2 17·8	139 16·4 00·4	146 14·0 58·1	Sabik	102 57·3	S 15 40·6						
11	100 01·7	30 15·4 28·3	297 10·3 17·2	154 19·2 00·5	161 16·7 58·2										
	12	115 04·2	45 15·1 N 19 28·8	312 11·3 N 8 16·6	169 22·0 S 20 00·6	176 19·3 S 20 58·2	Schedar	350 25·1	N 56 19·3						
	13	130 06·7	60 14·7 29·2	327 12·4 16·0	184 24·7 00·7	191 22·0 58·2	Shaula	97 14·9	S 37 04·6						
	14	145 09·1	75 14·3 29·7	342 13·4 15·4	199 27·5 00·8	206 24·7 58·3	Sirius	159 08·7	S 16 39·8						
	15	160 11·6	90 14·0 .. 30·1	357 14·5 .. 14·8	214 30·3 .. 00·8	221 27·3 .. 58·3	Spica	259 12·7	S 10 57·6						
	16	175 14·1	105 13·6 30·6	12 15·6 14·2	229 33·1 00·9	236 30·0 58·4	Suhail	223 21·7	S 43 16·7						
17	190 16·5	120 13·2 31·0	27 16·6 13·6	244 35·9 01·0	251 32·6 58·4										
	18	205 19·0	135 12·9 N 19 31·5	42 17·7 N 8 13·0	259 38·7 S 20 01·1	266 35·3 S 20 58·4	Vega	81 05·1	N 38 45·0						
	19	220 21·4	150 12·5 32·0	57 18·7 12·4	274 41·5 01·2	281 37·9 58·5	Zuben'ubi	137 48·8	S 15 52·9						
	20	235 23·9	165 12·1 32·4	72 19·8 11·8	289 44·3 01·2	296 40·6 58·5									
	21	250 26·4	180 11·7 .. 32·9	87 20·8 .. 11·2	304 47·1 .. 01·3	311 43·3 .. 58·5									
	22	265 28·8	195 11·4 33·3	102 21·9 10·6	319 49·9 01·4	326 45·9 58·6	Venus	291 52·4	8 58						
23	280 31·3	210 11·0 33·8	117 23·0 10·0	334 52·7 01·5	341 48·6 58·6	Mars	197 57·7	15 13							
Mer. Pass.		h 4 24·9	v -0·4 d 0·5	v 1·1 d 0·6	v 2·8 d 0·1	v 2·7 d 0·0	Saturn	54 06·1	0 49						
								61 08·2	0 21						

G.M.T.	SUN				MOON				Lat.	Twilight		Sun-rise	Moonrise				
	G.H.A.	Dec.	G.H.A.	Dec.	d	H.P.	Naut.	Civil		15	16		17	18			
d	h	m	s	m	s	m	s	m	s	m	m	m	m	m	m	m	
SATURDAY	15	00	178	33.2	N21	36.1	154	09.2	13.5	N14	59.2	6.3	54.0				
	01	01	193	33.1		35.7	168	41.7	13.6		14 52.9	6.4	54.0				
	02	02	208	33.0		35.3	183	14.3	13.6		14 46.5	6.4	54.0				
	03	03	223	32.9		34.9	197	46.9	13.7		14 40.1	6.5	54.0				
	04	04	238	32.9		34.5	212	19.6	13.6		14 33.6	6.5	54.0				
	05	05	253	32.8		34.2	226	52.2	13.8		14 27.1	6.6	54.0				
	06	06	268	32.7	N21	33.8	241	25.0	13.7	N14	20.5	6.7	54.0				
	07	07	283	32.7		33.4	255	57.7	13.8		14 13.8	6.7	54.0				
	08	08	298	32.6		33.0	270	30.5	13.8		14 07.1	6.8	54.0				
	09	09	313	32.5		32.6	285	03.3	13.8		14 00.3	6.8	54.0				
	10	10	328	32.5		32.2	299	36.1	13.9		13 53.5	6.9	54.0				
	11	11	343	32.4		31.8	314	09.0	13.9		13 46.6	7.0	54.0				
	12	12	358	32.4	N21	31.4	328	41.9	13.9	N13	39.6	7.0	54.0				
	13	13	13	32.3		31.0	343	14.8	14.0		13 32.6	7.1	54.0				
	14	14	28	32.2		30.6	357	47.8	13.9		13 25.5	7.1	54.0				
	15	15	43	32.2		30.2	12	20.7	14.1		13 18.4	7.2	54.0				
	16	16	58	32.1		29.8	26	53.8	14.0		13 11.2	7.3	54.0				
	17	17	73	32.0		29.4	41	26.8	14.1		13 03.9	7.3	54.0				
	18	18	88	32.0	N21	29.0	55	59.9	14.1	N12	56.6	7.3	54.0				
	19	19	103	31.9		28.6	70	33.0	14.1		12 49.3	7.4	54.0				
	20	20	118	31.8		28.2	85	06.1	14.2		12 41.9	7.5	54.0				
	21	21	133	31.8		27.8	99	39.3	14.2		12 34.4	7.5	54.0				
	22	22	148	31.7		27.4	114	12.5	14.2		12 26.9	7.6	54.0				
	23	23	163	31.6		27.0	128	45.7	14.3		12 19.3	7.6	54.0				
SUNDAY	16	00	178	31.6	N21	26.6	143	19.0	14.3	N12	11.7	7.7	54.0				
	01	01	193	31.5		26.2	157	52.3	14.3		12 04.0	7.7	54.0				
	02	02	208	31.5		25.8	172	25.6	14.3		11 56.3	7.8	54.0				
	03	03	223	31.4		25.4	186	58.9	14.4		11 48.5	7.8	54.0				
	04	04	238	31.3		25.0	201	32.3	14.4		11 40.7	7.8	54.0				
	05	05	253	31.3		24.6	216	05.7	14.4		11 32.9	8.0	54.0				
	06	06	268	31.2	N21	24.2	230	39.1	14.4	N11	24.9	7.9	54.0				
	07	07	283	31.2		23.8	245	12.5	14.5		11 17.0	8.0	54.0				
	08	08	298	31.1		23.4	259	46.0	14.5		11 09.0	8.1	54.0				
	09	09	313	31.0		23.0	274	19.5	14.5		11 00.9	8.1	54.0				
	10	10	328	31.0		22.6	288	53.0	14.5		10 52.8	8.1	54.0				
	11	11	343	30.9		22.2	303	26.5	14.6		10 44.7	8.2	54.1				
	12	12	358	30.9	N21	21.8	318	00.1	14.6	N10	36.5	8.3	54.1				
	13	13	13	30.8		21.3	332	33.7	14.6		10 28.2	8.3	54.1				
	14	14	28	30.7		20.9	347	07.3	14.6		10 19.9	8.3	54.1				
	15	15	43	30.7		20.5	1	40.9	14.6		10 11.6	8.4	54.1				
	16	16	58	30.6		20.1	16	14.5	14.7		10 03.2	8.4	54.1				
	17	17	73	30.6		19.7	30	48.2	14.7		9 54.8	8.4	54.1				
	18	18	88	30.5	N21	19.3	45	21.9	14.7	N	9 46.4	8.5	54.1				
	19	19	103	30.4		18.9	59	55.6	14.7		9 37.9	8.6	54.1				
	20	20	118	30.4		18.5	74	29.3	14.8		9 29.3	8.5	54.1				
	21	21	133	30.3		18.0	89	03.1	14.8		9 20.8	8.7	54.1				
	22	22	148	30.3		17.6	103	36.9	14.7		9 12.1	8.6	54.1				
	23	23	163	30.2		17.2	118	10.6	14.8		9 03.5	8.7	54.1				
MONDAY	17	00	178	30.2	N21	16.8	132	44.4	14.9	N	8 54.8	8.7	54.1				
	01	01	193	30.1		16.4	147	18.3	14.8		8 46.1	8.8	54.1				
	02	02	208	30.0		16.0	161	52.1	14.8		8 37.3	8.8	54.2				
	03	03	223	30.0		15.5	176	25.9	14.9		8 28.5	8.9	54.2				
	04	04	238	29.9		15.1	190	59.8	14.9		8 19.6	8.8	54.2				
	05	05	253	29.9		14.7	205	33.7	14.9		8 10.8	9.0	54.2				
	06	06	268	29.8	N21	14.3	220	07.6	14.9	N	8 01.8	8.9	54.2				
	07	07	283	29.8		13.9	234	41.5	14.9		7 52.9	9.0	54.2				
	08	08	298	29.7		13.4	249	15.4	15.0		7 43.9	9.0	54.2				
	09	09	313	29.7		13.0	263	49.4	14.9		7 34.9	9.1	54.2				
	10	10	328	29.6		12.6	278	23.3	15.0		7 25.8	9.0	54.2				
	11	11	343	29.5		12.2	292	57.3	14.9		7 16.8	9.2	54.2				
	12	12	358	29.5	N21	11.7	307	31.2	15.0	N	7 07.6	9.1	54.2				
	13	13	13	29.4		11.3	322	05.2	15.0		6 58.5	9.2	54.3				
	14	14	28	29.4		10.9	336	39.2	15.0		6 49.3	9.2	54.3				
	15	15	43	29.3		10.5	351	13.2	15.0		6 40.1	9.2	54.3				
	16	16	58	29.3		10.0	5	47.2	15.0		6 30.9	9.3	54.3				
	17	17	73	29.2		09.6	20	21.2	15.0		6 21.6	9.3	54.3				
	18	18	88	29.2	N21	09.2	34	55.2	15.1	N	6 12.3	9.3	54.3				
	19	19	103	29.1		08.8	49	29.3	15.0		6 03.0	9.4	54.3				
	20	20	118	29.1		08.3	64	03.3	15.0		5 53.6	9.4	54.3				
	21	21	133	29.0		07.9	78	37.3	15.1		5 44.2	9.4	54.3				
	22	22	148	29.0		07.5	93	11.4	15.0		5 34.8	9.4	54.4				
	23	23	163	28.9		07.0	107	45.4	15.1		5 25.4	9.5	54.4				
										SUN		MOON					
										Day	Eqn. of Time 00h	Mer. Pass. 12h	Mer. Upper	Pass. Lower	Age		Phase
										15	m s	m s	h m	h m	h m	d	
										16	05 47	05 50	12 06	14 09	01 47	03	
										17	05 54	05 56	12 06	14 53	02 31	04	
											05 59	06 02	12 06	15 36	03 15	05	



G.M.T.	ARIES			VENUS -3-7			MARS +1-8			JUPITER -2-3			SATURN +0-3			STARS		
	G.H.A.	G.H.A.	Dec.	G.H.A.	G.H.A.	Dec.	G.H.A.	G.H.A.	Dec.	G.H.A.	G.H.A.	Dec.	G.H.A.	G.H.A.	Dec.	Name	S.H.A.	Dec.
d h																		
18 00	295 33-8	225 10-6	N 19 34-2	132 24-0	N 8 09-4		349 55-4	S 20 01-6		356 51-2	S 20 58-7		Acamar	315 48-3	S 40 27-4			
01	310 36-2	240 10-2	34-7	147 25-1	08-8		4 58-2	01-7		11 53-9	58-7		Achernar	335 56-0	S 57 25-7			
02	325 38-7	255 09-9	35-1	162 26-1	08-2		20 01-0	01-7		26 56-5	58-7		Acrux	173 53-4	S 62 53-4			
03	340 41-2	270 09-5	35-6	177 27-2	07-6		35 03-8	01-8		41 59-2	58-8		Adhara	255 43-7	S 28 55-2			
04	355 43-6	285 09-1	36-0	192 28-2	07-0		50 06-6	01-9		57 01-9	58-8		Aldebaran	291 34-7	N 16 25-8			
05	10 46-1	300 08-7	36-5	207 29-3	06-4		65 09-4	02-0		72 04-5	58-9							
06	25 48-5	315 08-4	N 19 36-9	222 30-4	N 8 05-8		80 12-2	S 20 02-0		87 07-2	S 20 58-9		Alioth	166 55-3	N 56 10-5			
07	131 05-8	330 08-0	37-3	237 31-4	05-2		95 15-0	02-1		102 09-8	58-9		Alkaid	153 29-8	N 49 30-7			
08	55 53-5	345 07-6	37-8	252 32-5	04-6		110 17-8	02-2		117 12-5	59-0		Al Na'ir	28 32-6	S 47 08-7			
09	70 55-9	0 07-2	38-2	267 33-5	04-0		125 20-6	02-3		132 15-2	59-0		Alnilam	276 26-5	S 1 13-6			
10	85 58-4	15 06-8	38-7	282 34-6	03-4		140 23-4	02-4		147 17-8	59-1		Alphard	218 34-9	S 8 29-5			
11	101 00-9	30 06-5	39-1	297 35-6	02-8		155 26-1	02-4		162 20-5	59-1							
12	116 03-3	45 06-1	N 19 39-6	312 36-7	N 8 02-2		170 28-9	S 20 02-5		177 23-1	S 20 59-1		Alphecca	126 44-1	N 26 50-9			
13	131 05-8	60 05-7	40-0	327 37-8	01-6		185 31-7	02-6		192 25-8	59-2		Alpheratz	358 24-0	N 28 52-5			
14	146 08-3	75 05-3	40-4	342 38-8	01-0		200 34-5	02-7		207 28-4	59-2		Altair	62 46-2	N 8 46-1			
15	161 10-7	90 04-9	40-9	357 39-9	8 00-4		215 37-3	02-8		222 31-1	59-2		Ankaa	353 54-3	S 42 30-7			
16	176 13-2	105 04-5	41-3	12 40-9	7 59-7		230 40-1	02-8		237 33-8	59-3		Antares	113 14-2	S 26 20-8			
17	191 15-7	120 04-2	41-8	27 42-0	59-1		245 42-9	02-9		252 36-4	59-3							
18	206 18-1	135 03-8	N 19 42-2	42 43-0	N 7 58-5		260 45-7	S 20 03-0		267 39-1	S 20 59-4		Arcturus	146 31-5	N 19 23-2			
19	221 20-6	150 03-4	42-6	57 44-1	57-9		275 48-5	03-1		282 41-7	59-4		Acra	108 50-8	S 68 57-6			
20	236 23-0	165 03-0	43-1	72 45-2	57-3		290 51-3	03-2		297 44-4	59-4		Avior	234 34-7	S 59 23-2			
21	251 25-5	180 02-6	43-5	87 46-2	56-7		305 54-1	03-2		312 47-0	59-5		Bellatrix	279 14-4	N 6 18-9			
22	266 28-0	195 02-6	43-9	102 47-3	56-1		320 56-9	03-3		327 49-7	59-5		Betelgeuse	271 44-1	N 7 24-0			
23	281 30-4	210 01-8	44-4	117 48-3	55-5		335 59-6	03-4		342 52-4	59-6							
19 00	296 32-9	225 01-4	N 19 44-8	132 49-4	N 7 54-9		351 02-4	S 20 03-5		357 55-0	S 20 59-6		Canopus	264 14-1	S 52 40-4			
01	311 35-4	240 01-0	45-2	147 50-4	54-3		6 05-2	03-6		12 57-7	59-6		Capella	281 32-9	N 45 57-4			
02	326 37-8	255 00-7	45-7	162 51-5	53-7		21 08-0	03-6		28 00-3	59-7		Deneb	49 57-7	N 45 08-6			
03	341 40-3	270 00-3	46-1	177 52-6	53-1		36 10-8	03-7		43 03-0	59-7		Denebola	183 13-8	N 14 47-4			
04	356 42-8	284 59-9	46-5	192 53-6	52-5		51 13-6	03-8		58 05-7	59-8		Diphda	349 35-2	S 18 11-8			
05	11 45-2	299 59-5	47-0	207 54-7	51-9		66 16-4	03-9		73 08-3	59-8							
06	26 47-7	314 59-1	N 19 47-4	222 55-7	N 7 51-3		81 19-2	S 20 04-0		88 11-0	S 20 59-8		Dubhe	194 40-3	N 61 57-8			
07	41 50-1	329 58-7	47-8	237 56-8	50-7		96 22-0	04-0		103 13-6	59-9		Elnath	279 02-6	N 28 34-4			
08	56 52-6	344 58-3	48-3	252 57-8	50-0		111 24-0	04-1		118 16-3	59-9		Eltanin	91 03-9	N 51 29-9			
09	71 55-1	359 57-9	48-7	267 58-9	49-4		126 27-6	04-2		133 18-9	20 59-9		Enif	34 25-4	N 9 41-9			
10	86 57-5	14 57-5	49-1	283 00-0	48-8		141 30-4	04-3		148 21-6	21 00-0		Fomalhaut	16 07-0	S 29 49-4			
11	102 00-0	29 57-1	49-5	298 01-0	48-2		156 33-2	04-4		163 24-3	00-0							
12	117 02-5	44 56-7	N 19 50-0	313 02-1	N 7 47-6		171 36-0	S 20 04-4		178 26-9	S 21 00-1		Gacrux	172 44-8	S 56 54-0			
13	132 04-9	59 56-3	50-4	328 03-1	47-0		186 38-8	04-5		193 29-6	00-1		Gienah	176 32-8	S 17 19-7			
14	147 07-4	74 55-9	50-8	343 04-2	46-4		201 41-5	04-6		208 32-2	00-1		Hadar	149 43-5	S 60 11-4			
15	162 09-9	89 55-5	51-2	358 05-2	45-8		216 44-3	04-7		223 34-9	00-2		Hamal	328 45-1	N 23 16-7			
16	177 12-3	104 55-1	51-7	13 06-3	45-2		231 47-1	04-8		238 37-5	00-2		Kaus Aust.	84 35-5	S 34 24-2			
17	192 14-8	119 54-7	52-1	28 07-3	44-6		246 49-9	04-8		253 40-2	00-3							
18	207 17-3	134 54-3	N 19 52-5	43 08-4	N 7 44-0		261 52-7	S 20 04-9		268 42-9	S 21 00-3		Kochab	137 18-0	N 74 19-2			
19	222 19-7	149 53-9	52-9	58 09-5	43-4		276 55-5	05-0		283 45-5	00-3		Markab	14 17-2	N 14 59-8			
20	237 22-2	164 53-5	53-4	73 10-5	42-8		291 58-3	05-1		298 48-2	00-4		Menkar	314 56-2	N 3 56-3			
21	252 24-6	179 53-1	53-8	88 11-6	42-2		307 01-1	05-2		313 50-8	00-4		Merkent	148 53-8	S 36 10-9			
22	267 27-1	194 52-7	54-2	103 12-6	41-5		322 03-9	05-2		328 53-5	00-5		Miaplacidus	221 48-8	S 69 33-7			
23	282 29-6	209 52-3	54-6	118 13-7	40-9		337 06-7	05-3		343 56-1	00-5							
20 00	297 32-0	224 51-9	N 19 55-0	133 14-7	N 7 40-3		352 09-5	S 20 05-4		358 58-8	S 21 00-5		Mirfak	309 36-8	N 49 43-2			
01	312 34-5	239 51-5	55-5	148 15-8	39-7		7 12-3	05-5		14 01-5	00-6		Nunki	76 46-6	S 26 20-6			
02	327 37-0	254 51-1	55-9	163 16-9	39-1		22 15-1	05-6		29 04-1	00-6		Peacock	54 20-5	S 56 51-4			
03	342 39-4	269 50-7	56-3	178 17-9	38-5		37 17-9	05-6		44 06-8	00-6		Pollux	244 16-1	N 28 07-2			
04	357 41-9	284 50-3	56-7	193 19-0	37-9		52 20-7	05-7		59 09-4	00-7		Procyon	245 41-1	N 5 19-4			
05	12 44-4	299 49-9	57-1	208 20-0	37-3		67 23-5	05-8		74 12-1	00-7							
06	27 46-8	314 49-5	N 19 57-5	223 21-1	N 7 36-7		82 26-3	S 20 05-9		89 14-8	S 21 00-8		Rasalhague	96 42-6	N 12 35-4			
07	42 49-3	329 49-1	57-9	238 22-1	36-1		97 29-1	06-0		104 17-4	00-8		Regulus	208 25-5	N 12 09-4			
08	57 51-7	344 48-7	58-4	253 23-2	35-5		112 31-8	06-0		119 20-1	00-8		Rigel	281 50-1	S 8 14-7			
09	72 54-2	359 48-3	58-8	268 24-2	34-8		127 34-6	06-1		134 22-7	00-9		Rigel Kent.	140 45-2	S 60 40-7			
10	87 56-7	14 47-8	59-2	283 25-3	34-2		142 37-4	06-2		149 25-4	00-9		Sabik	102 57-3	S 15 40-6			
11	102 59-1	29 47-4	19 59-6	298 26-4	33-6		157 40-2	06-3		164 28-0	01-0							
12	118 01-6	44 47-0	N 20 00-4	313 27-4	N 7 33-0		172 43-0	S 20 06-4		179 30-7	S 21 01-0		Schedar	350 25-1	N 56 19-3			
13	133 04-1	59 46-6	00-0	328 28-5	32-4		187 45-8	06-4		194 33-4	01-0		Shaula	97 14-9	S 37 04-6			
14	148 06-5	74 46-2	00-8	343 29-5	31-8		202 48-6	06-5		209 36-0	01-1		Sirius	259 08-7	S 16 39-8			
15	163 09-0	89 45-8	01-2	358 30-6	31-2		217 51-4	06-6		224 38-7	01-1		Spica	159 12-7	S 10 57-6			
16	178 11-5	104 45-4	01-6	13 31-6	30-6		232 54-2	06-7		239 41-3	01-1		Suhail	223 21-7	S 43 16-7			
17	193 13-9	119 45-0	02-0	28 32-7	30-0		247 57-0	06-8		254 44-0	01-2							
18	208 16-4	134 44-6	N 20 02-4	43 33-7	N 7 29-4		262 59-8	S 20 06-8		269 46-6	S 21 01-2		Vega	81 05-1	N 38 45-0			
19	223 18-9	149 44-1	02-8	58 34-8	28-8		278 02-6	06-9		284 49-3	01-3		Zuben'ubi	137 48-8	S 15 52-9			
20	238 21-3	164 43-7	03-2	73 35-9	28-1		293 05-4	07-0		299 52-0	01-3							
21	253 23-8	179 43-3	03-6	88 36-9	27-5		308 08-2	07-1		314 54-6	01-3							
22	268 26																	

G.M.T.		SUN		MOON				Lat.	Twilight		Sun-rise	Moonrise									
		G.H.A.	Dec.	G.H.A.	<i>v</i>	Dec.	<i>d</i>		H.P.	Naut.		Civil	18	19	20	21					
d	h	°	'	°	'	°	'	°	'	°	'	°	'	°	'	°	'				
TUESDAY	18 00	178	28.9	N21	06.6	122	19.5	15.0	N	5	15.9	9.5	54.4	N 72	□	□	□	09 21	10 58	12 37	14 22
	01	193	28.8		06.2	136	53.5	15.1		5	06.4	9.5	54.4	N 70	□	□	□	09 26	10 57	12 30	14 08
	02	208	28.8		05.7	151	27.6	15.0		4	56.9	9.5	54.4	68	///	///	00 42	09 31	10 57	12 25	13 56
	03	223	28.7	..	05.3	166	01.6	15.1		4	47.4	9.6	54.4	66	///	///	01 51	09 34	10 56	12 20	13 47
	04	238	28.7		04.9	180	35.7	15.0		4	37.8	9.6	54.4	64	///	///	02 26	09 37	10 56	12 16	13 39
	05	253	28.6		04.4	195	09.7	15.1		4	28.2	9.6	54.5	62	///	01 14	02 51	09 40	10 56	12 12	13 32
	06	268	28.6	N21	04.0	209	43.8	15.0	N	4	18.6	9.6	54.5	60	///	01 57	03 11	09 42	10 55	12 09	13 26
	07	283	28.5		03.6	224	17.8	15.1		4	09.0	9.7	54.5	N 58	///	02 25	03 27	09 44	10 55	12 07	13 21
	08	298	28.5		03.1	238	51.9	15.0		3	59.3	9.6	54.5	56	01 07	02 46	03 40	09 46	10 55	12 04	13 16
	09	313	28.4	..	02.7	253	25.9	15.1		3	49.7	9.7	54.5	54	01 47	03 03	03 52	09 48	10 54	12 02	13 12
	10	328	28.4		02.3	268	00.0	15.0		3	40.0	9.7	54.5	52	02 13	03 18	04 03	09 49	10 54	12 01	13 09
	11	343	28.3		01.8	282	34.0	15.1		3	30.3	9.8	54.6	50	02 33	03 30	04 12	09 51	10 54	11 59	13 05
	12	358	28.3	N21	01.4	297	08.1	15.0	N	3	20.5	9.7	54.6	45	03 10	03 55	04 31	09 54	10 54	11 55	12 58
	13	13	28.2		00.9	311	42.1	15.0		3	10.8	9.8	54.6	N 40	03 36	04 15	04 47	09 56	10 53	11 52	12 52
	14	28	28.2		00.5	326	16.1	15.0		3	01.0	9.8	54.6	35	03 56	04 31	05 00	09 58	10 53	11 49	12 47
	15	43	28.1	21	00.1	340	50.1	15.0		2	51.2	9.8	54.6	30	04 12	04 44	05 11	10 00	10 53	11 47	12 43
	16	58	28.1	20	59.6	355	24.1	15.0		2	41.4	9.8	54.6	20	04 38	05 06	05 30	10 03	10 52	11 43	12 35
	17	73	28.0		59.2	9	58.1	15.0		2	31.6	9.8	54.7	N 10	04 58	05 25	05 47	10 06	10 52	11 39	12 28
	18	88	28.0	N20	58.7	24	32.1	15.0	N	2	21.8	9.9	54.7	0	05 15	05 41	06 03	10 09	10 52	11 36	12 22
	19	103	27.9		58.3	39	06.1	14.9		2	11.9	9.8	54.7	S 10	05 30	05 56	06 18	10 11	10 51	11 32	12 15
	20	118	27.9		57.8	53	40.0	15.0		2	02.1	9.9	54.7	20	05 44	06 11	06 34	10 14	10 51	11 29	12 09
	21	133	27.8	..	57.4	68	14.0	14.9		1	52.2	9.9	54.7	30	05 58	06 27	06 53	10 17	10 51	11 25	12 01
	22	148	27.8		57.0	82	47.9	14.9		1	42.3	9.9	54.7	35	06 05	06 36	07 03	10 19	10 50	11 23	11 57
	23	163	27.8		56.5	97	21.8	15.0		1	32.4	10.0	54.8	40	06 13	06 46	07 16	10 21	10 50	11 20	11 52
19 00	178	27.7	N20	56.1	111	55.8	14.9	N	1	22.4	9.9	54.8	45	06 22	06 58	07 30	10 24	10 50	11 17	11 46	
01	193	27.7		55.6	126	29.7	14.8		1	12.5	9.9	54.8	S 50	06 31	07 11	07 48	10 26	10 50	11 14	11 39	
02	208	27.6		55.2	141	03.5	14.9		1	02.6	10.0	54.8	52	06 35	07 18	07 57	10 28	10 50	11 12	11 36	
03	223	27.6	..	54.7	155	37.4	14.8		0	52.6	10.0	54.8	54	06 40	07 24	08 06	10 29	10 49	11 10	11 33	
04	238	27.5		54.3	170	11.2	14.9		0	42.6	9.9	54.9	56	06 45	07 32	08 16	10 31	10 49	11 08	11 29	
05	253	27.5		53.8	184	45.1	14.8		0	32.7	10.0	54.9	58	06 50	07 40	08 28	10 32	10 49	11 06	11 25	
06	268	27.4	N20	53.4	199	18.9	14.8	N	0	22.7	10.0	54.9	S 60	06 56	07 50	08 42	10 34	10 49	11 04	11 20	
07	283	27.4		52.9	213	52.7	14.7		0	12.7	10.0	54.9									
08	298	27.4		52.5	228	26.4	14.8	N	0	02.7	10.0	55.0	Lat.	Sun-set	Twilight	Moonset					
09	313	27.3	..	52.0	243	00.2	14.7	S	0	07.3	10.0	55.0			Civil	18	19	20	21		
10	328	27.3		51.6	257	33.9	14.7		0	17.3	10.1	55.0		°	h m	h m	h m	h m	h m	h m	
11	343	27.2		51.1	272	07.6	14.7		0	27.4	10.0	55.0	N 72	□	□	□	22 48	22 41	22 33	22 24	
12	358	27.2	N20	50.7	286	41.3	14.7	S	0	37.4	10.0	55.0	N 70	□	□	□	22 46	22 44	22 42	22 40	
13	13	27.1		50.2	301	15.0	14.6		0	47.4	10.1	55.1	68	23 19	///	///	22 45	22 47	22 50	22 54	
14	28	27.1		49.7	315	48.6	14.6		0	57.5	10.0	55.1	66	22 17	///	///	22 43	22 49	22 56	23 04	
15	43	27.1	..	49.3	330	22.2	14.6		1	07.5	10.1	55.1	64	21 44	///	///	22 42	22 51	23 01	23 13	
16	58	27.0		48.8	344	55.8	14.5		1	17.6	10.0	55.1	62	21 19	22 54	///	22 41	22 53	23 06	23 21	
17	73	27.0		48.4	359	29.3	14.5		1	27.6	10.1	55.2	60	21 00	22 13	///	22 40	22 55	23 10	23 28	
18	88	26.9	N20	47.9	14	02.8	14.5	S	1	37.7	10.0	55.2	N 58	20 44	21 46	///	22 39	22 56	23 14	23 34	
19	103	26.9		47.5	28	36.3	14.5		1	47.7	10.1	55.2	56	20 31	21 25	23 01	22 39	22 57	23 17	23 39	
20	118	26.9		47.0	43	09.8	14.4		1	57.8	10.0	55.2	54	20 19	21 08	22 23	22 38	22 58	23 20	23 44	
21	133	26.8	..	46.5	57	43.2	14.4		2	07.8	10.1	55.3	52	20 09	20 54	21 58	22 37	22 59	23 22	23 48	
22	148	26.8		46.1	72	16.6	14.4		2	17.9	10.0	55.3	50	20 00	20 41	21 38	22 37	23 00	23 25	23 52	
23	163	26.7		45.6	86	50.0	14.3		2	27.9	10.1	55.3	45	19 41	20 16	21 02	22 36	23 02	23 30	24 00	
20 00	178	26.7	N20	45.2	101	23.3	14.3	S	2	38.0	10.0	55.3	N 40	19 25	19 57	20 36	22 35	23 04	23 34	24 08	
01	193	26.6		44.7	115	56.6	14.3		2	48.0	10.1	55.4	35	19 12	19 41	20 16	22 34	23 05	23 38	24 14	
02	208	26.6		44.2	130	29.9	14.2		2	58.1	10.0	55.4	30	19 01	19 28	20 00	22 33	23 07	23 41	24 19	
03	223	26.6	..	43.8	145	03.1	14.2		3	08.1	10.0	55.4	20	18 42	19 06	19 34	22 32	23 09	23 47	24 28	
04	238	26.5		43.3	159	36.3	14.1		3	18.1	10.1	55.4	N 10	18 25	18 48	19 14	22 30	23 11	23 53	24 37	
05	253	26.5		42.8	174	09.4	14.1		3	28.2	10.0	55.5	0	18 10	18 32	18 58	22 29	23 13	23 57	24 44	
06	268	26.5	N20	42.4	188	42.5	14.1	S	3	38.2	10.0	55.5	S 10	17 55	18 17	18 43	22 28	23 14	24 02	00 02	
07	283	26.4		41.9	203	15.6	14.0		3	48.2	10.0	55.5	20	17 38	18 02	18 29	22 27	23 16	24 07	00 07	
08	298	26.4		41.5	217	48.6	14.0		3	58.2	10.1	55.6	30	17 20	17 46	18 15	22 25	23 19	24 13	00 13	
09	313	26.3	..	41.0	232	21.6	14.0		4	08.3	10.0	55.6	35	17 09	17 37	18 08	22 24	23 20	24 17	00 17	
10	328	26.3		40.5	246	54.6	13.9		4	18.3	9.9	55.6	40	16 57	17 27	18 00	22 23	23 21	24 20	00 20	
11	343	26.3		40.0	261	27.5	13.9		4	28.2	10.0	55.6	45	16 43	17 15	17 51	22 22	23 23	24 25	00 25	
12	358	26.2	N20	39.6	276	00.4	13.8	S	4	38.2	10.0	55.7	S 50	1							

G.M.T.	ARIES		VENUS -3.7		MARS +1.9		JUPITER -2.3		SATURN +0.3		STARS		
	G.H.A.	Dec.	G.H.A.	Dec.	G.H.A.	Dec.	G.H.A.	Dec.	G.H.A.	Dec.	Name	S.H.A.	Dec.
21 00	298 31.2	224 42.1 N20 04.9	133 40.1 N 7 25.7	353 16.6 S20 07.3	0 02.6 S21 01.5	Acamar	315 48.3	S 40 27.3					
01	313 33.6	239 41.6 05.3	148 41.1 25.1	8 19.4 07.4	15 05.2 01.5	Achernar	335 56.0	S 57 25.7					
02	328 36.1	254 41.2 05.7	163 42.2 24.5	23 22.2 07.5	30 07.9 01.5	Acrux	173 53.4	S 62 53.4					
03	343 38.6	269 40.8 .. 06.1	178 43.2 .. 23.9	38 25.0 .. 07.6	45 10.6 .. 01.6	Adhara	255 43.7	S 28 55.1					
04	358 41.0	284 40.4 06.5	193 44.3 23.3	53 27.8 07.6	60 13.2 01.6	Aldebaran	291 34.7	N 16 25.8					
05	13 43.5	299 40.0 06.8	208 45.4 22.6	68 30.6 07.7	75 15.9 01.6								
06	28 46.0	314 39.6 N20 07.2	223 46.4 N 7 22.0	83 33.4 S20 07.8	90 18.5 S21 01.7	Alioth	166 55.3	N 56 10.5					
07	43 48.4	329 39.1 07.6	238 47.5 21.4	98 36.2 07.9	105 21.2 01.7	Alkaid	153 29.8	N 49 30.7					
08	58 50.9	344 38.7 08.0	253 48.5 20.8	113 38.9 08.0	120 23.9 01.8	Al Na'ir	28 32.6	S 47 08.7					
09	73 53.4	359 38.3 .. 08.4	268 49.6 .. 20.2	128 41.7 .. 08.0	135 26.5 .. 01.8	Alnilam	276 26.5	S 1 13.6					
10	88 55.8	14 37.9 08.8	283 50.6 19.6	143 44.5 08.1	150 29.2 01.8	Alphard	218 34.9	S 8 29.5					
11	103 58.3	29 37.4 09.2	298 51.7 19.0	158 47.3 08.2	165 31.8 01.9								
12	119 00.7	44 37.0 N20 09.6	313 52.7 N 7 18.4	173 50.1 S20 08.3	180 34.5 S21 01.9	Alphecca	126 44.1	N 26 50.9					
13	134 03.2	59 36.6 10.0	328 53.8 17.7	188 52.9 08.4	195 37.1 02.0	Alpheratz	358 24.0	N 28 52.5					
14	149 05.7	74 36.2 10.4	343 54.8 17.1	203 55.7 08.4	210 39.8 02.0	Altair	62 46.2	N 8 46.1					
15	164 08.1	89 35.7 .. 10.8	358 55.9 .. 16.5	218 58.5 .. 08.5	225 42.5 .. 02.0	Ankaa	353 54.3	S 42 30.7					
16	179 10.6	104 35.3 11.2	13 57.0 15.9	234 01.3 08.6	240 45.1 02.1	Antares	113 14.2	S 26 20.8					
17	194 13.1	119 34.9 11.6	28 58.0 15.3	249 04.1 08.7	255 47.8 02.1								
18	209 15.5	134 34.5 N20 12.0	43 59.1 N 7 14.7	264 06.9 S20 08.8	270 50.4 S21 02.2	Arcturus	146 31.5	N 19 23.2					
19	224 18.0	149 34.0 12.3	59 00.1 14.1	279 09.7 08.8	285 53.1 02.2	Atria	108 50.8	S 68 57.6					
20	239 20.5	164 33.6 12.7	74 01.2 13.5	294 12.5 08.9	300 55.7 02.2	Avior	234 34.7	S 59 23.2					
21	254 22.9	179 33.2 .. 13.1	89 02.2 .. 12.8	309 15.3 .. 09.0	315 58.4 .. 02.3	Bellatrix	279 14.4	N 6 18.9					
22	269 25.4	194 32.8 13.5	104 03.3 12.2	324 18.1 09.1	331 01.1 02.3	Betelgeuse	271 44.1	N 7 24.0					
23	284 27.8	209 32.3 13.9	119 04.3 11.6	339 20.9 09.2	346 03.7 02.3								
22 00	299 30.3	224 31.9 N20 14.3	134 05.4 N 7 11.0	354 23.7 S20 09.2	1 06.4 S21 02.4	Canopus	264 14.1	S 52 40.4					
01	314 32.8	239 31.5 14.6	149 06.4 10.4	9 26.5 09.3	16 09.0 02.4	Capella	281 32.8	N 45 57.4					
02	329 35.2	254 31.0 15.0	164 07.5 09.8	24 29.3 09.4	31 11.7 02.5	Deneb	49 57.7	N 45 08.6					
03	344 37.7	269 30.6 .. 15.4	179 08.6 .. 09.2	39 32.1 .. 09.5	46 14.4 .. 02.5	Denebola	183 13.8	N 14 47.4					
04	359 40.2	284 30.2 15.8	194 09.6 08.5	54 34.9 09.5	61 17.0 02.5	Diphda	349 35.1	S 18 11.8					
05	14 42.6	299 29.7 16.2	209 10.7 07.9	69 37.7 09.6	76 19.7 02.6								
06	29 45.1	314 29.3 N20 16.6	224 11.7 N 7 07.3	84 40.5 S20 09.7	91 22.3 S21 02.6	Dubhe	194 40.3	N 61 57.8					
07	44 47.6	329 28.9 16.9	239 12.8 06.7	99 43.3 09.8	106 25.0 02.7	El Nath	279 02.5	N 28 34.4					
08	59 50.0	344 28.4 17.3	254 13.8 06.1	114 46.1 09.9	121 27.6 02.7	Eltanin	91 03.9	N 51 29.9					
09	74 52.5	359 28.0 .. 17.7	269 14.9 .. 05.5	129 48.9 .. 09.9	136 30.3 .. 02.7	Enif	34 25.3	N 9 41.9					
10	89 55.0	14 27.6 18.4	284 15.9 04.9	144 51.7 10.0	151 33.0 02.8	Fomalhaut	16 07.0	S 29 49.4					
11	104 57.4	29 27.1 18.4	299 17.0 04.2	159 54.5 10.1	166 35.6 02.8								
12	119 59.9	44 26.7 N20 18.8	314 18.1 N 7 03.6	174 57.3 S20 10.2	181 38.3 S21 02.8	Gacrux	172 44.8	S 56 54.0					
13	135 02.3	59 26.2 19.2	329 19.1 03.0	190 00.0 10.3	196 40.9 02.9	Gienah	176 32.8	S 17 19.7					
14	150 04.8	74 25.8 19.6	344 20.2 02.4	205 02.8 10.3	211 43.6 03.0	Hadar	149 43.6	S 60 11.4					
15	165 07.3	89 25.4 .. 19.9	359 21.2 .. 01.8	220 05.6 .. 10.4	226 46.2 .. 03.0	Hamal	328 45.1	N 23 16.7					
16	180 09.7	104 24.9 20.3	14 22.3 01.2	235 08.4 10.5	241 48.9 03.0	Kaus Aust.	84 35.5	S 34 24.2					
17	195 12.2	119 24.5 20.7	29 23.3 00.6	250 11.2 10.6	256 51.6 03.0								
18	210 14.7	134 24.0 N20 21.1	44 24.4 N 6 59.9	265 14.0 S20 10.7	271 54.2 S21 03.1	Kochab	137 18.1	N 74 19.2					
19	225 17.1	149 23.6 21.4	59 25.4 59.3	280 16.8 10.7	286 56.9 03.1	Markab	14 17.2	N 14 59.9					
20	240 19.6	164 23.2 21.8	74 26.5 58.7	295 19.6 10.8	301 59.5 03.2	Menkar	314 56.2	N 3 56.3					
21	255 22.1	179 22.7 .. 22.2	89 27.5 .. 58.1	310 22.4 .. 10.9	317 02.2 .. 03.2	Menkent	148 53.8	S 36 10.9					
22	270 24.5	194 22.3 22.5	104 28.6 57.5	325 25.2 11.0	332 04.8 03.2	Miaplacidus	221 48.8	S 69 33.6					
23	285 27.0	209 21.8 22.9	119 29.7 56.9	340 28.0 11.1	347 07.5 03.3								
23 00	300 29.5	224 21.4 N20 23.3	134 30.7 N 6 56.3	355 30.8 S20 11.1	2 10.2 S21 03.3	Mirfak	309 36.8	N 49 43.2					
01	315 31.9	239 20.9 23.6	149 31.8 55.6	10 33.6 11.2	17 12.8 03.3	Nunki	76 46.6	S 26 20.6					
02	330 34.4	254 20.5 24.0	164 32.8 55.0	25 36.4 11.3	32 15.5 03.4	Peacock	54 20.5	S 56 51.4					
03	345 36.8	269 20.1 .. 24.4	179 33.9 .. 54.4	40 39.2 .. 11.4	47 18.1 .. 03.4	Pollux	244 16.1	N 28 07.2					
04	0 39.3	284 19.6 24.7	194 34.9 53.8	55 42.0 11.5	62 20.8 03.5	Procyon	245 41.1	N 5 19.4					
05	15 41.8	299 19.2 25.1	209 36.0 53.2	70 44.8 11.5	77 23.4 03.5								
06	30 44.2	314 18.7 N20 25.4	224 37.0 N 6 52.6	85 47.6 S20 11.6	92 26.1 S21 03.5	Rasalhague	96 42.6	N 12 35.4					
07	45 46.7	329 18.3 25.8	239 38.1 51.9	100 50.4 11.7	107 28.8 03.6	Regulus	208 25.5	N 12 09.4					
08	60 49.2	344 17.8 26.2	254 39.1 51.3	115 53.2 11.8	122 31.4 03.6	Rigel	281 50.0	S 8 14.7					
09	75 51.6	359 17.4 .. 26.5	269 40.2 .. 50.7	130 56.0 .. 11.8	137 34.1 .. 03.6	Rigel Kent.	140 45.2	S 60 40.7					
10	90 54.1	14 16.9 26.9	284 41.2 50.1	145 58.8 11.9	152 36.7 03.7	Sabik	102 57.3	S 15 40.6					
11	105 56.6	29 16.5 27.2	299 42.3 49.5	161 01.6 12.0	167 39.4 03.7								
12	120 59.0	44 16.0 N20 27.6	314 43.4 N 6 48.9	176 04.4 S20 12.1	182 42.0 S21 03.8	Schedar	350 25.1	N 56 19.3					
13	136 01.5	59 15.6 28.0	329 44.4 48.2	191 07.2 12.2	197 44.7 03.8	Shaula	97 14.9	S 37 04.6					
14	151 04.0	74 15.1 28.3	344 45.5 47.6	206 10.0 12.2	212 47.4 03.8	Sirius	259 08.7	S 16 39.8					
15	166 06.4	89 14.7 .. 28.7	359 46.5 .. 47.0	221 12.8 .. 12.3	227 50.0 .. 03.9	Spica	159 12.7	S 10 57.6					
16	181 08.9	104 14.2 29.0	14 47.6 46.4	236 15.6 12.4	242 52.7 03.9	Suhail	223 21.7	S 43 16.7					
17	196 11.3	119 13.8 29.4	29 48.6 45.8	251 18.4 12.5	257 55.3 04.0								
18	211 13.8	134 13.3 N20 29.7	44 49.7 N 6 45.2	266 21.2 S20 12.6	272 58.0 S21 04.0	Vega	81 05.1	N 38 45.1					
19	226 16.3	149 12.9 30.1	59 50.7 44.5	281 24.0 12.6	288 00.6 04.0	Zuben'ubi	137 48.8	S 15 52.9					
20	241 18.7	164 12.4 30.4	74 51.8 43.9	296 26.8 12.7	303 03.3 04.1								
21	256 21.2	179 11.9 .. 30.8	89 52.8 .. 43.3	311 29.6 .. 12.8	318 06.0 .. 04.1								
22	271 23.7	194 11.5 31.1	104 53.9 42.7	326 32.4 12.9	333 08.6 04.1								
23	286 26.1	209 11.0 31.5	119 54.9 42.1	341 35.2 13.0	348 11.3 04.2								
Mer. Pass.	4 01.3	v -0.4 d 0.4	v 1.1 d 0.6	v 2.8 d 0.1	v 2.7 d 0.0								
						Venus	285 01.6	9 02					
						Mars	194 35.1	15 03					
						Jupiter	54 53.4	0 22					
						Saturn	61 36.1	23 51					

G.M.T.		SUN		MOON					Lat.	Twilight		Sun-rise	Moonrise								
		G.H.A.	Dec.	G.H.A.	<i>v</i>	Dec.	<i>d</i>	H.P.		Naut.	Civil		21	22	23	24					
d	h	°	'	°	'	'		°	'	'	h	m	h	m	h	m	h	m			
21	00	178	25.8	N20	33.9	90	31.0	13.2	S	6	37.0	9.8	56.0	N 72	□	□	□	14 22	16 15	18 23	■
	01	193	25.8		33.4	105	03.2	13.2		6	46.8	9.7	56.1	N 70	□	□	□	14 08	15 50	17 39	19 31
	02	208	25.7		33.0	119	35.4	13.1		6	56.5	9.8	56.1	68	///	///	01 12	13 56	15 31	17 10	18 46
	03	223	25.7	••	32.5	134	07.2	13.0		7	06.3	9.7	56.1	66	///	///	02 04	13 47	15 16	16 48	18 16
	04	238	25.7		32.0	148	39.5	13.0		7	16.0	9.7	56.2	64	///	///	02 36	13 39	15 04	16 30	17 54
05	253	25.6		31.5	163	11.5	13.0		7	25.7	9.7	56.2	62	///	01 29	02 59	13 32	14 54	16 16	17 37	
06	268	25.6	N20	31.0	177	43.5	12.9	S	7	35.4	9.7	56.2	60	///	02 07	03 17	13 26	14 45	16 04	17 22	
07	283	25.6		30.6	192	15.4	12.8		7	45.1	9.6	56.3	N 58	///	02 32	03 32	13 21	14 37	15 54	17 09	
08	298	25.6		30.1	206	47.2	12.7		7	54.7	9.6	56.3	56	01 22	02 52	03 45	13 16	14 30	15 45	16 55	
FRI	09	313	25.5	••	29.6	221	18.9	12.7		8	04.3	9.6	56.3	54	01 56	03 09	03 57	13 12	14 24	15 37	16 49
	10	328	25.5		29.1	235	50.6	12.6		8	13.9	9.5	56.4	52	02 20	03 23	04 07	13 09	14 19	15 30	16 41
	11	343	25.5		28.6	250	22.2	12.6		8	23.4	9.6	56.4	50	02 39	03 34	04 15	13 05	14 14	15 24	16 33
	12	358	25.4	N20	28.2	264	53.8	12.5	S	8	33.0	9.5	56.4	45	03 14	03 59	04 34	12 58	14 03	15 10	16 17
	13	13	25.4		27.7	279	25.3	12.5		8	42.5	9.4	56.5	N 40	03 39	04 18	04 49	12 52	13 55	14 59	16 04
DAY	14	28	25.4		27.2	293	56.8	12.3		8	51.9	9.5	56.5	35	03 58	04 33	05 02	12 47	13 47	14 49	15 53
	15	43	25.3	••	26.7	308	28.1	12.3		9	01.4	9.4	56.5	30	04 14	04 46	05 13	12 43	13 41	14 41	15 43
	16	58	25.3		26.2	322	59.4	12.3		9	10.8	9.3	56.6	20	04 39	05 08	05 32	12 35	13 29	14 27	15 26
	17	73	25.3		25.7	337	30.7	12.2		9	20.1	9.4	56.6	N 10	04 59	05 25	05 48	12 28	13 19	14 14	15 12
	18	88	25.3	N20	25.2	352	01.9	12.1	S	9	29.5	9.3	56.6	0	05 15	05 41	06 03	12 22	13 10	14 02	14 58
19	103	25.2		24.8	6	33.0	12.0		9	38.8	9.2	56.7	S 10	05 30	05 55	06 18	12 15	13 01	13 51	14 44	
20	118	25.2		24.3	21	04.0	12.0		9	48.0	9.3	56.7	20	05 43	06 10	06 34	12 09	12 51	13 38	14 30	
21	133	25.2	••	23.8	35	35.0	11.9		9	57.3	9.2	56.8	30	05 57	06 26	06 51	12 01	12 40	13 24	14 13	
22	148	25.1		23.3	50	05.9	11.8		10	06.5	9.1	56.8	35	06 04	06 35	07 02	11 57	12 34	13 16	14 04	
23	163	25.1		22.8	64	36.7	11.7		10	15.6	9.1	56.8	40	06 11	06 44	07 14	11 52	12 27	13 07	13 53	
24													45	06 19	06 55	07 28	11 46	12 18	12 56	13 40	
22	00	178	25.1	N20	22.3	79	07.4	11.7	S	10	24.7	9.1	56.9	S 50	06 28	07 08	07 45	11 39	12 09	12 43	13 25
	01	193	25.1		21.8	93	38.1	11.6		10	33.8	9.0	56.9	52	06 32	07 14	07 53	11 36	12 04	12 37	13 18
	02	208	25.0		21.3	108	08.7	11.5		10	42.8	9.0	56.9	54	06 37	07 21	08 02	11 33	11 59	12 30	13 10
	03	223	25.0	••	20.8	122	39.2	11.5		10	51.8	9.0	57.0	56	06 41	07 28	08 12	11 29	11 53	12 23	13 01
	04	238	25.0		20.4	137	09.7	11.4		11	00.8	8.9	57.0	58	06 46	07 36	08 23	11 25	11 47	12 15	12 51
05	253	25.0		19.9	151	40.1	11.3		11	09.7	8.9	57.0	S 60	06 52	07 45	08 37	11 20	11 40	12 05	12 39	
06	268	24.9	N20	19.4	166	10.4	11.2	S	11	18.6	8.8	57.1									
07	283	24.9		18.9	180	40.6	11.1		11	27.4	8.7	57.1									
SAT	08	298	24.9		18.4	195	10.7	11.1		11	36.1	8.8	57.2								
	09	313	24.9	••	17.9	209	40.8	11.0		11	44.9	8.6	57.2								
	10	328	24.8		17.4	224	10.8	10.9		11	53.5	8.7	57.2								
	11	343	24.8		16.9	238	40.7	10.9		12	02.2	8.5	57.3								
	12	358	24.8	N20	16.4	253	10.6	10.7	S	12	10.7	8.5	57.3	N 72	□	□	□	22 24	22 13	21 55	■
URDAY	13	13	24.8		15.9	267	40.3	10.7		12	19.2	8.5	57.4	N 70	□	□	□	22 40	22 39	22 40	22 46
	14	28	24.7		15.4	282	10.0	10.6		12	27.7	8.4	57.4	68	22 54	///	///	22 54	23 00	23 10	23 31
	15	43	24.7	••	14.9	296	39.6	10.5		12	36.1	8.4	57.4	66	22 05	///	///	23 04	23 15	23 33	24 01
	16	58	24.7		14.4	311	09.1	10.4		12	44.5	8.3	57.5	64	21 35	///	///	23 13	23 29	23 51	24 24
	17	73	24.7		13.9	325	38.5	10.3		12	52.8	8.2	57.5	62	21 12	22 39	///	23 21	23 40	24 06	00 06
18	88	24.6	N20	13.4	340	07.8	10.3	S	13	01.0	8.2	57.5	60	20 54	22 03	///	23 28	23 50	24 18	00 18	
19	103	24.6		12.9	354	37.1	10.2		13	09.2	8.1	57.6	N 58	20 39	21 38	///	23 34	23 58	24 29	00 29	
20	118	24.6		12.4	9	06.3	10.1		13	17.3	8.1	57.6	56	20 26	21 19	22 47	23 39	24 05	00 05	00 38	
21	133	24.6	••	11.9	23	35.4	10.0		13	25.4	8.0	57.7	54	20 15	21 03	22 14	23 44	24 12	00 12	00 47	
22	148	24.6		11.4	38	04.4	9.9		13	33.4	7.9	57.7	52	20 05	20 49	21 51	23 48	24 18	00 18	00 54	
23	163	24.5		10.9	52	33.3	9.8		13	41.3	7.9	57.7	50	19 57	20 37	21 32	23 52	24 23	00 23	01 01	
24													45	19 38	20 13	20 58	24 00	00 00	00 35	01 15	
23	00	178	24.5	N20	10.4	67	02.1	9.8	S	13	49.2	7.8	57.8	N 40	19 23	19 54	20 33	24 08	00 08	00 45	01 27
	01	193	24.5		09.9	81	30.9	9.7		13	57.0	7.8	57.8	35	19 11	19 39	20 14	24 14	00 14	00 53	01 38
	02	208	24.5		09.4	95	59.6	9.5		14	04.8	7.6	57.9	30	19 00	19 26	19 58	24 19	00 19	01 00	01 46
	03	223	24.4	••	08.9	110	28.1	9.5		14	12.4	7.6	57.9	20	18 41	19 05	19 33	24 28	00 28	01 13	02 02
	04	238	24.4		08.4	124	56.6	9.4		14	20.0	7.6	57.9	N 10	18 25	18 47	19 14	24 37	00 37	01 24	02 16
05	253	24.4		07.9	139	25.0	9.3		14	27.6	7.4	58.0	0	18 10	18 32	18 58	24 44	00 44	01 35	02 28	
06	268	24.4	N20	07.3	153	53.3	9.3	S	14	35.0	7.4	58.0	S 10	17 55	18 17	18 43	00 02	00 52	01 45	02 41	
07	283	24.4		06.8	168	21.6	9.1		14	42.4	7.3	58.1	20	17 39	18 03	18 30	00 07				

		ARIES		VENUS -3.6		MARS +1.9		JUPITER -2.3		SATURN +0.3		STARS			
G.M.T.		G.H.A.		G.H.A. Dec.		G.H.A. Dec.		G.H.A. Dec.		G.H.A. Dec.		Name		S.H.A. Dec.	
d	h	° ' "		° ' "		° ' "		° ' "		° ' "					
MONDAY	24 00	301 28.6	224 10.6	N 20 31.8	134 56.0	N 6 41.5	356 38.0	S 20 13.0	3 13.9	S 21 04.2	Acamar	315 48.2	S 40 27.3		
	01	316 31.1	239 10.1	32.2	149 57.1	40.8	11 40.8	13.1	18 16.6	04.3	Alchernar	335 55.9	S 57 25.7		
	02	331 33.5	254 09.7	32.5	164 58.1	40.2	26 43.6	13.2	33 19.2	04.3	Acrux	173 53.4	S 62 53.3		
	03	346 36.0	269 09.2	.. 32.9	179 59.2	.. 39.6	41 46.4	.. 13.3	48 21.9	.. 04.3	Adhara	255 43.7	S 28 55.1		
	04	1 38.4	284 08.7	33.2	195 00.2	39.0	56 49.2	13.4	63 24.6	04.4	Aldebaran	291 34.7	N 16 25.8		
	05	16 40.9	299 08.3	33.6	210 01.3	38.4	71 52.0	13.4	78 27.2	04.4					
	06	31 43.4	314 07.8	N 20 33.9	225 02.3	N 6 37.8	86 54.8	S 20 13.5	93 29.9	S 21 04.4	Alioth	166 55.3	N 56 10.5		
	07	46 45.8	329 07.4	34.2	240 03.4	37.1	101 57.6	13.6	108 32.5	04.5	Alkaid	153 29.9	N 49 30.7		
	08	61 48.3	344 06.9	34.6	255 04.4	36.5	117 00.4	13.7	123 35.2	04.5	Al Na'ir	28 32.6	S 47 08.1		
	09	76 50.8	359 06.4	.. 34.9	270 05.5	.. 35.9	132 03.2	.. 13.8	138 37.8	.. 04.6	Alnilam	276 26.5	S 1 13.6		
	10	91 53.2	14 06.0	35.3	285 06.5	35.3	147 06.0	13.8	153 40.5	04.6	Alphard	218 34.9	S 8 29.5		
	11	106 55.7	29 05.5	35.6	300 07.6	34.7	162 08.8	13.9	168 43.2	04.6					
	12	121 58.2	44 05.1	N 20 35.9	315 08.6	N 6 34.0	177 11.6	S 20 14.0	183 45.8	S 21 04.7	Alphecca	126 44.1	N 26 50.9		
	13	137 00.6	59 04.6	36.3	330 09.7	33.4	192 14.4	14.1	198 48.5	04.7	Alpheratz	358 23.9	N 28 52.6		
	14	152 03.1	74 04.1	36.6	345 10.7	32.8	207 17.2	14.1	213 51.1	04.7	Altair	62 46.2	N 8 46.1		
	15	167 05.6	89 03.7	.. 36.9	0 11.8	.. 32.2	222 20.0	.. 14.2	228 53.8	.. 04.8	Ankaa	353 54.2	S 42 30.7		
	16	182 08.0	104 03.2	37.3	15 12.9	31.6	237 22.8	14.3	243 56.4	04.8	Antares	113 14.2	S 26 20.8		
	17	197 10.5	119 02.7	37.6	30 13.9	30.9	252 25.6	14.4	258 59.1	04.9					
	18	212 12.9	134 02.3	N 20 38.0	45 15.0	N 6 30.3	267 28.4	S 20 14.5	274 01.7	S 21 04.9	Arcturus	146 31.5	N 19 23.2		
	19	227 15.4	149 01.8	38.3	60 16.0	29.7	282 31.2	14.5	289 04.4	04.9	Atria	108 50.9	S 68 57.6		
	20	242 17.9	164 01.3	38.6	75 17.1	29.1	297 33.9	14.6	304 07.1	05.0	Avior	234 34.7	S 59 23.2		
	21	257 20.3	179 00.9	.. 39.0	90 18.1	.. 28.5	312 36.7	.. 14.7	319 09.7	.. 05.0	Bellatrix	279 14.4	N 6 18.9		
	22	272 22.8	194 00.4	39.3	105 19.2	27.8	327 39.5	14.8	334 12.4	05.1	Betelgeuse	271 44.1	N 7 24.0		
23	287 25.3	208 59.9	39.6	120 20.2	27.2	342 42.3	14.9	349 15.0	05.1						
TUESDAY	25 00	302 27.7	223 59.5	N 20 39.9	135 21.3	N 6 26.6	357 45.1	S 20 14.9	4 17.7	S 21 05.1	Canopus	264 14.1	S 52 40.4		
	01	317 30.2	238 59.0	40.3	150 23.3	26.0	12 47.9	15.0	19 20.3	05.2	Capella	281 32.8	N 45 57.4		
	02	332 32.7	253 58.5	40.6	165 23.4	25.4	27 50.7	15.1	34 23.0	05.2	Deneb	49 57.7	N 45 08.6		
	03	347 35.1	268 58.1	.. 40.9	180 24.4	.. 24.7	42 53.5	.. 15.2	49 25.6	.. 05.2	Denebola	183 13.8	N 14 47.4		
	04	2 37.6	283 57.6	41.3	195 25.5	24.1	57 56.3	15.2	64 28.3	05.3	Diphda	349 35.1	S 18 11.7		
	05	17 40.1	298 57.1	41.6	210 26.5	23.5	72 59.1	15.3	79 31.0	05.3					
	06	32 42.5	313 56.6	N 20 41.9	225 27.6	N 6 22.9	88 01.9	S 20 15.4	94 33.6	S 21 05.4	Dubhe	194 40.3	N 61 57.8		
	07	47 45.0	328 56.2	42.2	240 28.6	22.3	103 04.7	15.5	109 36.3	05.4	Elmath	279 02.5	N 28 34.4		
	08	62 47.4	343 55.7	42.6	255 29.7	21.6	118 07.5	15.6	124 38.9	05.4	Eltanin	91 03.9	N 51 29.9		
	09	77 49.9	358 55.2	.. 42.9	270 30.7	.. 21.0	133 10.3	.. 15.6	139 41.6	.. 05.5	Enif	34 25.3	N 9 42.0		
	10	92 52.4	13 54.7	43.2	285 31.8	20.4	148 13.1	15.7	154 44.2	05.5	Fomalhaut	16 07.0	S 29 49.4		
	11	107 54.8	28 54.3	43.5	300 32.9	19.8	163 15.9	15.8	169 46.9	05.5					
	12	122 57.3	43 53.8	N 20 43.8	315 33.9	N 6 19.2	178 18.7	S 20 15.9	184 49.6	S 21 05.6	Gacrux	172 44.8	S 56 54.0		
	13	137 59.8	58 53.3	44.2	330 35.0	18.5	193 21.5	16.0	199 52.2	05.6	Gienah	176 32.8	S 17 19.7		
	14	153 02.2	73 52.8	44.5	345 36.0	17.9	208 24.3	16.0	214 54.9	05.7	Hamal	149 43.6	S 60 11.4		
	15	168 04.7	88 52.4	.. 44.8	0 37.1	.. 17.3	223 27.1	.. 16.1	229 57.5	.. 05.7	Hamal	328 45.1	N 23 16.7		
	16	183 07.2	103 51.9	45.1	15 38.1	16.7	238 29.9	16.2	245 00.2	05.7	Kaus Aust.	84 35.5	S 34 24.2		
	17	198 09.6	118 51.4	45.4	30 39.2	16.0	253 32.7	16.3	260 02.8	05.8					
	18	213 12.1	133 50.9	N 20 45.7	45 40.2	N 6 15.4	268 35.5	S 20 16.4	275 05.5	S 21 05.8	Kochab	137 18.1	N 74 19.2		
	19	228 14.6	148 50.4	46.1	60 41.3	14.8	283 38.3	16.4	290 08.1	05.8	Markab	14 17.2	N 14 59.9		
	20	243 17.0	163 50.0	46.4	75 42.3	14.2	298 41.1	16.5	305 10.8	05.9	Menkar	314 56.2	N 3 56.3		
	21	258 19.5	178 49.5	.. 46.7	90 43.4	.. 13.6	313 43.9	.. 16.6	320 13.5	.. 05.9	Menkent	148 53.9	S 36 10.9		
	22	273 21.9	193 49.0	47.0	105 44.4	12.9	328 46.7	16.7	335 16.1	06.0	Miaplacidus	221 48.8	S 69 33.6		
23	288 24.4	208 48.5	47.3	120 45.5	12.3	343 49.5	16.7	350 18.8	06.0						
WEDNESDAY	26 00	303 26.9	223 48.0	N 20 47.6	135 46.5	N 6 11.7	358 52.3	S 20 16.8	5 21.4	S 21 06.0	Mirfak	309 36.7	N 49 43.2		
	01	318 29.3	238 47.6	47.9	150 47.6	11.1	13 55.1	16.9	20 24.1	06.1	Nunki	76 46.6	S 26 20.6		
	02	333 31.8	253 47.1	48.2	165 48.6	10.4	28 57.9	17.0	35 26.7	06.1	Peacock	54 20.4	S 56 51.5		
	03	348 34.3	268 46.6	.. 48.5	180 49.7	.. 09.8	44 00.7	.. 17.1	50 29.4	.. 06.2	Pollux	244 16.1	N 28 07.2		
	04	3 36.7	283 46.1	48.8	195 50.7	09.2	59 03.5	17.1	65 32.1	06.2	Procyon	245 41.1	N 5 19.5		
	05	18 39.2	298 45.6	49.2	210 51.8	08.6	74 06.3	17.2	80 34.7	06.2					
	06	33 41.7	313 45.1	N 20 49.5	225 52.8	N 6 08.0	89 09.1	S 20 17.3	95 37.4	S 21 06.3	Rasalhague	96 42.6	N 12 35.4		
	07	48 44.1	328 44.7	49.8	240 53.9	07.3	104 11.9	17.4	110 40.0	06.3	Regulus	208 25.5	N 12 09.4		
	08	63 46.6	343 44.2	50.1	255 54.9	06.7	119 14.7	17.5	125 42.7	06.3	Rigel	281 50.0	S 8 14.7		
	09	78 49.1	358 43.7	.. 50.4	270 56.0	.. 06.1	134 17.5	.. 17.5	140 45.3	.. 06.4	Rigel Kent.	140 45.2	S 60 40.7		
	10	93 51.5	13 43.2	50.7	285 57.0	05.5	149 20.3	17.6	155 48.0	06.4	Sabik	102 57.3	S 15 40.6		
	11	108 54.0	28 42.7	51.0	300 58.1	04.8	164 23.1	17.7	170 50.6	06.5					
	12	123 56.4	43 42.2	N 20 51.3	315 59.2	N 6 04.2	179 25.9	S 20 17.8	185 53.3	S 21 06.5	Schedar	350 25.0	N 56 19.3		
	13	138 58.9	58 41.7	51.6	331 00.2	03.6	194 28.7	17.8	200 56.0	06.5	Shaula	97 14.9	S 37 04.6		
	14	154 01.4	73 41.3	51.9	346 01.3	03.0	209 31.5	17.9	215 58.6	06.6	Sirius	259 08.7	S 16 39.7		
	15	169 03.8	88 40.8	.. 52.2	1 02.3	.. 02.4	224 34.3	.. 18.0	231 01.3	.. 06.6	Spica	159 12.7	S 10 57.6		
	16	184 06.3	103 40.3	52.5	16 03.4	01.7	239 37.1	18.1	246 03.9	06.6	Suhail	223 21.7	S 43 16.7		
	17	199 08.8	118 39.8	52.8	31 04.4	01.1	254 39.9	18.2	261 06.6	06.7					
	18	214 11.2	133 39.3	N 20 53.1	46 05.5	N 6 00.5	269 42.7	S 20 18.2	276 09.2	S 21 06.7	Vega	81 05.1	N 38 45.1		
	19	229 13.7	148 38.8	53.4	61 06.5	5 59.9	284 45.5	18.3	291 11.9	06.8	Zuben'ubi	137 48.8	S 15 52.9		
	20	244 16.2	163 38.3	53.7	76 07.6	59.2	299 48.3	18.4	306 14.5	06.8		S.H.A.	Mer. Pass.		
	21	259 18.6	178 37.8	.. 54.0	91 08.6	.. 58.6	314 51.1	.. 18.5	321 17.2	.. 06.8	Venus	281 31.8	9 04		
	22	274 21.1	193 37.3	54.2	106 09.7	58.0	329 53.9	18.6	336 19.8	06.9	Mars	192 53.6	14 58		
23	289 23.5	208 36.8	54.5	121 10.7	57.4	344 56.7	18.6	351 22.5	06.9	Jupiter	55 17.4	0 09			
Mer. Pass.		h 3 49.5	m 5	v -0.5	d 0.3	v 1.1	d 0.6	v 2.8	d 0.1	v 2.7	d 0.0	Saturn	61 50.0	23 39	

G.M.T.		SUN		MOON				Lat.	Twilight		Sun-rise	Moonrise					
		G.H.A.	Dec.	G.H.A.	<i>v</i>	Dec.	<i>d</i>		H.P.	Naut.		Civil	24	25	26	27	
d	h	°	'	°	'	°	'	°	'	h	m	h	m	h	m	h	m
MONDAY	00	178	24.1	N19	58.1	54	07.9	7.7	S16	36.0	5.8	58.7					
	01	193	24.1		57.6	68	34.6	7.5	16	41.8	5.8	58.8					
	02	208	24.0		57.1	83	01.1	7.5	16	47.6	5.8	58.8					
	03	223	24.0	..	56.6	97	27.6	7.4	16	53.4	5.6	58.9					
	04	238	24.0		56.0	111	54.0	7.3	16	59.0	5.5	58.9					
	05	253	24.0		55.5	126	20.3	7.2	17	04.5	5.4	58.9					
	06	268	24.0	N19	55.0	140	46.5	7.1	S17	09.9	5.3	59.0					
	07	283	24.0		54.5	155	12.6	7.0	17	15.2	5.2	59.0					
	08	298	24.0		53.9	169	38.6	7.0	17	20.4	5.1	59.1					
	09	313	24.0	..	53.4	184	04.6	6.8	17	25.5	5.0	59.1					
	10	328	23.9		52.9	198	30.4	6.8	17	30.5	4.9	59.1					
	11	343	23.9		52.4	212	56.2	6.7	17	35.4	4.8	59.2					
	12	358	23.9	N19	51.9	227	21.9	6.6	S17	40.2	4.7	59.2					
	13	13	23.9		51.3	241	47.5	6.6	17	44.9	4.5	59.2					
	14	28	23.9		50.8	256	13.1	6.4	17	49.4	4.5	59.3					
	15	43	23.9	..	50.3	270	38.5	6.4	17	53.9	4.4	59.3					
	16	58	23.9		49.7	285	03.9	6.3	17	58.3	4.2	59.4					
	17	73	23.9		49.2	299	29.2	6.2	18	02.5	4.1	59.4					
	18	88	23.9	N19	48.7	313	54.4	6.1	S18	06.6	4.0	59.4					
	19	103	23.8		48.2	328	19.5	6.1	18	10.6	3.9	59.5					
	20	118	23.8		47.6	342	44.6	5.9	18	14.5	3.8	59.5					
	21	133	23.8	..	47.1	357	09.5	5.9	18	18.3	3.7	59.6					
	22	148	23.8		46.6	11	34.4	5.9	18	22.0	3.5	59.6					
23	163	23.8		46.0	25	59.3	5.7	18	25.5	3.5	59.6						
TUESDAY	00	178	23.8	N19	45.5	40	24.0	5.7	S18	29.0	3.3	59.7					
	01	193	23.8		45.0	54	48.7	5.6	18	32.3	3.2	59.7					
	02	208	23.8		44.4	69	13.3	5.5	18	35.5	3.0	59.7					
	03	223	23.8	..	43.9	83	37.8	5.5	18	38.5	3.0	59.8					
	04	238	23.8		43.4	98	02.3	5.4	18	41.5	2.8	59.8					
	05	253	23.8		42.8	112	26.7	5.3	18	44.3	2.7	59.8					
	06	268	23.7	N19	42.3	126	51.0	5.3	S18	47.0	2.6	59.9					
	07	283	23.7		41.8	141	15.3	5.2	18	49.6	2.4	59.9					
	08	298	23.7		41.2	155	39.5	5.1	18	52.0	2.3	59.9					
	09	313	23.7	..	40.7	170	03.6	5.1	18	54.3	2.2	60.0					
	10	328	23.7		40.2	184	27.7	5.0	18	56.5	2.1	60.0					
	11	343	23.7		39.6	198	51.7	4.9	18	58.6	1.9	60.0					
	12	358	23.7	N19	39.1	213	15.6	4.9	S19	00.5	1.8	60.1					
	13	13	23.7		38.5	227	39.5	4.8	19	02.3	1.6	60.1					
	14	28	23.7		38.0	242	03.3	4.8	19	03.9	1.6	60.1					
	15	43	23.7	..	37.5	256	27.1	4.7	19	05.5	1.4	60.2					
	16	58	23.7		36.9	270	50.8	4.7	19	06.9	1.2	60.2					
	17	73	23.7		36.4	285	14.5	4.6	19	08.1	1.2	60.2					
	18	88	23.7	N19	35.8	299	38.1	4.6	S19	09.3	1.0	60.3					
	19	103	23.7		35.3	314	01.7	4.5	19	10.3	0.8	60.3					
	20	118	23.7		34.8	328	25.2	4.4	19	11.1	0.8	60.3					
	21	133	23.7	..	34.2	342	48.6	4.4	19	11.9	0.5	60.4					
	22	148	23.7		33.7	357	12.0	4.4	19	12.4	0.5	60.4					
23	163	23.7		33.1	11	35.4	4.3	19	12.9	0.3	60.4						
WEDNESDAY	00	178	23.7	N19	32.6	25	58.7	4.3	S19	13.2	0.2	60.5					
	01	193	23.7		32.0	40	22.0	4.3	19	13.4	0.0	60.5					
	02	208	23.7		31.5	54	45.3	4.2	19	13.4	0.1	60.5					
	03	223	23.7	..	30.9	69	08.5	4.2	19	13.3	0.2	60.5					
	04	238	23.7		30.4	83	31.7	4.1	19	13.1	0.4	60.6					
	05	253	23.6		29.8	97	54.8	4.1	19	12.7	0.5	60.6					
	06	268	23.6	N19	29.3	112	17.9	4.1	S19	12.2	0.7	60.6					
	07	283	23.6		28.7	126	41.0	4.0	19	11.5	0.8	60.6					
	08	298	23.6		28.2	141	04.0	4.0	19	10.7	0.9	60.7					
	09	313	23.6	..	27.6	155	27.0	4.0	19	09.8	1.1	60.7					
	10	328	23.6		27.1	169	50.0	4.0	19	08.7	1.3	60.7					
	11	343	23.6		26.5	184	13.0	3.9	19	07.4	1.3	60.7					
	12	358	23.6	N19	26.0	198	35.9	3.9	S19	06.1	1.5	60.8					
	13	13	23.6		25.4	212	58.8	3.9	19	04.6	1.7	60.8					
	14	28	23.6		24.9	227	21.7	3.9	19	02.9	1.8	60.8					
	15	43	23.7	..	24.3	241	44.6	3.9	19	01.1	1.9	60.8					
	16	58	23.7		23.8	256	07.5	3.8	18	59.2	2.1	60.9					
	17	73	23.7		23.2	270	30.3	3.8	18	57.1	2.2	60.9					
	18	88	23.7	N19	22.7	284	53.1	3.9	S18	54.9	2.4	60.9					
	19	103	23.7		22.1	299	16.0	3.8	18	52.5	2.5	60.9					
	20	118	23.7		21.5	313	38.8	3.8	18	50.0	2.6	60.9					
	21	133	23.7	..	21.0	328	01.6	3.8	18	47.4	2.8	61.0					
	22	148	23.7		20.4	342	24.4	3.8	18	44.6	2.9	61.0					
23	163	23.7		19.9	356	47.2	3.8	18	41.7	3.1	61.0						
S.D. 15.8 <i>d</i> 0.5 S.D. 16.1 16.4 16.6																	
Day Eqn. of Time 00 ^h 12 ^h Mer. Pass. Mer. Upper Mer. Lower Age Phase																	
24 m s m s h m h m h m d																	
24 06 24 06 24 12 06 21 12 08 43 12																	
25 06 25 06 25 12 06 22 12 09 41 13																	
26 06 25 06 25 12 06 23 13 10 42 14																	

G.M.T.	ARIES		VENUS -3.6		MARS +1.9		JUPITER -2.3		SATURN +0.3		STARS		
	G.H.A.		G.H.A.	Dec.	G.H.A.	Dec.	G.H.A.	Dec.	G.H.A.	Dec.	Name	S.H.A.	Dec.
27	^d 00	^h 304 26.0	^d 223 36.3	^m N20 54.8	^d 136 11.8	^m N 5 56.7	^d 359 59.5	^m S20 18.7	^d 6 25.2	^m S21 06.9	Acamar	315 48.2	S 40 27.3
	01	319 28.5	238 35.8	55.1	151 12.8	56.1	15 02.3	18.8	21 27.8	07.0	Achernar	335 55.9	S 57 25.7
	02	334 30.9	253 35.4	55.4	166 13.9	55.5	30 05.1	18.9	36 30.5	07.0	Acrux	173 53.4	S 62 53.3
	03	349 33.4	268 34.9	55.7	181 14.9	54.9	45 07.9	18.9	51 33.1	07.1	Adhara	255 43.7	S 28 55.1
	04	4 35.9	283 34.4	56.0	196 16.0	54.2	60 10.7	19.0	66 35.8	07.1	Aldebaran	291 34.6	N 16 25.9
	05	19 38.3	298 33.9	56.3	211 17.0	53.6	75 13.5	19.1	81 38.4	07.1			
	06	34 40.8	313 33.4	N20 56.6	226 18.1	N 5 53.0	90 16.3	S20 19.2	96 41.1	S21 07.2	Alioth	166 55.3	N 56 10.5
	07	49 43.3	328 32.9	56.8	241 19.1	52.4	105 19.1	19.3	111 43.7	07.2	Alkaid	153 29.9	N 49 30.7
	08	64 45.7	343 32.4	57.1	256 20.2	51.7	120 21.9	19.3	126 46.4	07.2	Al Na'ir	28 32.6	S 47 08.7
	09	79 48.2	358 31.9	57.4	271 21.2	51.1	135 24.7	19.4	141 49.1	07.3	Alnilam	276 26.4	S 1 13.5
	10	94 50.7	13 31.4	57.7	286 22.3	50.5	150 27.5	19.5	156 51.7	07.3	Alphard	218 34.9	S 8 29.4
	11	109 53.1	28 30.9	58.0	301 23.3	49.9	165 30.3	19.6	171 54.4	07.4			
	12	124 55.6	43 30.4	N20 58.3	316 24.4	N 5 49.2	180 33.1	S20 19.6	186 57.0	S21 07.4	Alphecca	126 44.1	N 26 50.9
	13	139 58.0	58 29.9	58.5	331 25.4	48.6	195 35.9	19.7	201 59.7	07.4	Alpheratz	358 23.9	N 28 52.6
	14	155 00.5	73 29.4	58.8	346 26.5	48.0	210 38.7	19.8	217 02.3	07.5	Altair	62 46.2	N 8 46.1
	15	170 03.0	88 28.9	59.1	1 27.5	47.4	225 41.5	19.9	232 05.0	07.5	Ankaa	353 54.2	S 42 30.7
	16	185 05.4	103 28.4	59.4	16 28.6	46.7	240 44.3	20.0	247 07.6	07.5	Antares	113 14.2	S 26 20.8
	17	200 07.9	118 27.9	59.6	31 29.6	46.1	255 47.1	20.0	262 10.3	07.6			
	18	215 10.4	133 27.4	N20 59.9	46 30.7	N 5 45.5	270 49.9	S20 20.1	277 12.9	S21 07.6	Arcturus	146 31.5	N 19 23.2
	19	230 12.8	148 26.9	21 00.2	61 31.7	44.9	285 52.7	20.2	292 15.6	07.7	Atria	108 50.9	S 68 57.7
	20	245 15.3	163 26.4	00.5	76 32.8	44.2	300 55.5	20.3	307 18.3	07.7	Avior	234 34.7	S 59 23.2
	21	260 17.8	178 25.9	00.8	91 33.8	43.6	315 58.3	20.3	322 20.9	07.7	Bellatrix	279 14.4	N 6 18.9
	22	275 20.2	193 25.4	01.0	106 34.9	43.0	331 01.1	20.4	337 23.6	07.8	Betelgeuse	271 44.0	N 7 24.0
	23	290 22.7	208 24.9	01.3	121 35.9	42.4	346 03.9	20.5	352 26.2	07.8			
28	00	305 25.2	223 24.3	N21 01.6	136 37.0	N 5 41.7	1 06.7	S20 20.6	7 28.9	S21 07.8	Canopus	264 14.0	S 52 40.4
	01	320 27.6	238 23.8	01.8	151 38.0	41.1	16 09.5	20.7	22 31.5	07.9	Capella	281 32.8	N 45 57.4
	02	335 30.1	253 23.3	02.1	166 39.1	40.5	31 12.3	20.7	37 34.2	07.9	Deneb	49 57.7	N 45 08.6
	03	350 32.5	268 22.8	02.4	181 40.1	39.9	46 15.0	20.8	52 36.8	08.0	Denebola	183 13.9	N 14 47.4
	04	5 35.0	283 22.3	02.6	196 41.2	39.2	61 17.8	20.9	67 39.5	08.0	Diphda	349 35.1	S 18 11.7
	05	20 37.5	298 21.8	02.9	211 42.2	38.6	76 20.6	21.0	82 42.1	08.0			
	06	35 39.9	313 21.3	N21 03.2	226 43.3	N 5 38.0	91 23.4	S20 21.0	97 44.8	S21 08.1	Dubhe	194 40.3	N 61 57.8
	07	50 42.4	328 20.8	03.4	241 44.3	37.4	106 26.2	21.1	112 47.5	08.1	Elnath	279 02.5	N 28 34.4
	08	65 44.9	343 20.3	03.7	256 45.4	36.7	121 29.0	21.2	127 50.1	08.1	Eltanin	91 03.9	N 51 29.9
	09	80 47.3	358 19.8	04.0	271 46.4	36.1	136 31.8	21.3	142 52.8	08.2	Enif	34 25.3	N 9 42.0
	10	95 49.8	13 19.3	04.2	286 47.5	35.5	151 34.6	21.4	157 55.4	08.2	Fomalhaut	16 07.0	S 29 49.4
	11	110 52.3	28 18.8	04.5	301 48.5	34.9	166 37.4	21.4	172 58.1	08.3			
	12	125 54.7	43 18.2	N21 04.8	316 49.6	N 5 34.2	181 40.2	S20 21.5	188 00.7	S21 08.3	Gacrux	172 44.9	S 56 54.0
	13	140 57.2	58 17.7	05.0	331 50.6	33.6	196 43.0	21.6	203 03.4	08.3	Gienah	176 32.9	S 17 19.7
	14	155 59.7	73 17.2	05.3	346 51.7	33.0	211 45.8	21.7	218 06.0	08.4	Hadar	149 43.6	S 60 11.4
	15	171 02.1	88 16.7	05.5	1 52.7	32.3	226 48.6	21.7	233 08.7	08.4	Hamal	328 45.1	N 23 16.7
	16	186 04.6	103 16.2	05.8	16 53.8	31.7	241 51.4	21.8	248 11.3	08.4	Kaus Aust.	84 35.5	S 34 24.2
	17	201 07.0	118 15.7	06.1	31 54.8	31.1	256 54.2	21.9	263 14.0	08.5			
	18	216 09.5	133 15.2	N21 06.3	46 55.9	N 5 30.5	271 57.0	S20 22.0	278 16.6	S21 08.5	Kochab	137 18.2	N 74 19.2
	19	231 12.0	148 14.7	06.6	61 56.9	29.8	286 59.8	22.0	293 19.3	08.5	Makab	14 17.2	N 14 59.9
	20	246 14.4	163 14.1	06.8	76 58.0	29.2	302 02.6	22.1	308 22.0	08.6	Menkar	314 56.2	N 3 56.3
	21	261 16.9	178 13.6	07.1	91 59.0	28.6	317 05.4	22.2	323 24.6	08.6	Menkent	148 53.9	S 36 10.9
	22	276 19.4	193 13.1	07.3	107 00.1	28.0	332 08.2	22.3	338 27.3	08.7	Miaplacidus	221 48.8	S 69 33.6
	23	291 21.8	208 12.6	07.6	122 01.1	27.3	347 11.0	22.4	353 29.9	08.7			
29	00	306 24.3	223 12.1	N21 07.8	137 02.2	N 5 26.7	2 13.8	S20 22.4	8 32.6	S21 08.7	Mirfak	309 36.7	N 49 43.2
	01	321 26.8	238 11.6	08.1	152 03.2	26.1	17 16.6	22.5	23 35.2	08.8	Nunki	76 46.6	S 26 20.6
	02	336 29.2	253 11.0	08.3	167 04.3	25.4	32 19.4	22.6	38 37.9	08.8	Peacock	54 20.4	S 56 51.5
	03	351 31.7	268 10.5	08.6	182 05.3	24.8	47 22.2	22.7	53 40.5	08.8	Pollux	244 16.1	N 28 07.2
	04	6 34.2	283 10.0	08.8	197 06.4	24.2	62 25.0	22.7	68 43.2	08.9	Procyon	245 41.1	N 5 19.5
	05	21 36.6	298 09.5	09.1	212 07.4	23.6	77 27.8	22.8	83 45.8	08.9			
	06	36 39.1	313 09.0	N21 09.3	227 08.5	N 5 22.9	92 30.6	S20 22.9	98 48.5	S21 09.0	Rasalhague	96 42.6	N 12 35.5
	07	51 41.5	328 08.5	09.6	242 09.5	22.3	107 33.4	23.0	113 51.1	09.0	Regulus	208 25.5	N 12 09.4
	08	66 44.0	343 07.9	09.8	257 10.6	21.7	122 36.2	23.1	128 53.8	09.0	Rigel	281 50.0	S 8 14.7
	09	81 46.5	358 07.4	10.1	272 11.6	21.0	137 39.0	23.1	143 56.5	09.1	Rigel Kent.	140 45.3	S 60 40.7
	10	96 48.9	13 06.9	10.3	287 12.7	20.4	152 41.8	23.2	158 59.1	09.1	Sabik	102 57.3	S 15 40.6
	11	111 51.4	28 06.4	10.5	302 13.7	19.8	167 44.6	23.3	174 01.8	09.1			
	12	126 53.9	43 05.8	N21 10.8	317 14.8	N 5 19.1	182 47.4	S20 23.4	189 04.4	S21 09.2	Schedar	350 25.0	N 56 19.3
	13	141 56.3	58 05.3	11.0	332 15.8	18.5	197 50.2	23.4	204 07.1	09.2	Shaula	97 14.9	S 37 04.6
	14	156 58.8	73 04.8	11.3	347 16.9	17.9	212 53.0	23.5	219 09.7	09.2	Sirius	259 08.6	S 16 39.7
	15	172 01.3	88 04.3	11.5	2 17.9	17.3	227 55.8	23.6	234 12.4	09.3	Spica	159 12.7	S 10 57.6
	16	187 03.7	103 03.8	11.7	17 19.0	16.6	242 58.6	23.7	249 15.0	09.3	Suhail	223 21.7	S 43 16.6
	17	202 06.2	118 03.2	12.0	32 20.0	16.0	258 01.4	23.7	264 17.7	09.4			
	18	217 08.6	133 02.7	N21 12.2	47 21.1	N 5 15.4	273 04.2	S20 23.8	279 20.3	S21 09.4	Vega	81 05.1	N 38 45.1
	19	232 11.1	148 02.2	12.4	62 22.1	14.7	288 07.0	23.9	294 23.0	09.4	Zuben'ubi	137 48.8	S 15 52.9
	20	247 13.6	163 01.7	12.7	77 23.2	14.1	303 09.8	24.0	309 25.6	09.5			
	21	262 16.0	178 01.1	12.9	92 24.2	13.5	318 12.6	24.1	324 28.3	09.5			
	22	277 18.5	193 00.6	13.1	107 25.3	12.8	333 15.4	24.1	339 30.9	09.5			
	23	292 21.0	208 00.1	13.4	122 26.3	12.2	348 18.2	24.2	354 33.6	09.6			
Mer. Pass. ^h 3 37.7 ^m v -0.5 d 0.3 v 1.1 d 0.6 v 2.8 d 0.1 v 2.7 d 0.0													
												S.H.A.	Mer. Pass.
												^h 277 59.1 ^m 9 07	
												^h 191 11.8 ^m 14 53	
												^h 55 41.5 ^m 23 51	
												^h 62 03.7 ^m 23 26	

G.M.T.		SUN		MOON						Lat.	Twilight		Sun-rise	Moonrise											
		G.H.A.	Dec.	G.H.A.	°	Dec.	d	H.P.	Naut.		Civil	27		28	29	30									
d	h	°	'	°	'	°	'	°	'	°	'	h	m	h	m	h	m	h	m	h	m				
27	00	178	23.7	N19	19.3	11	10.0	3.8	S18	38.6	3.2	61.0	N 72	□	□	□	22	54	22	30	22	18	22	08	
	01	193	23.7		18.8	25	32.8	3.8	18	35.4	3.4	61.0	N 70	///	///	00	29	22	01	22	03	22	01		
	02	208	23.7		18.2	39	55.6	3.8	18	32.0	3.4	61.1	68	///	///	01	52	21	28	21	42	21	49		
	03	223	23.7	..	17.6	54	18.4	3.8	18	28.6	3.7	61.1	66	///	///	02	29	21	04	21	25	21	39		
	04	238	23.7		17.1	68	41.2	3.8	18	24.9	3.7	61.1	64	///	01	10	02	54	20	45	21	11	21	30	
	05	253	23.7		16.5	83	04.0	3.8	18	21.2	3.9	61.1	62	///	01	57	03	14	20	29	21	00	21	22	
	06	268	23.7	N19	16.0	97	26.8	3.9	S18	17.3	4.1	61.1	60	///	02	26	03	30	20	16	20	50	21	15	
	07	283	23.7		15.4	111	49.7	3.8	18	13.2	4.2	61.1	N 58	01	04	02	48	03	44	20	05	20	41	21	10
	08	298	23.7		14.8	126	12.5	3.9	18	09.0	4.3	61.2	56	01	47	03	05	03	56	19	55	20	33	21	04
	09	313	23.7	..	14.3	140	35.4	3.8	18	04.7	4.4	61.2	54	02	14	03	20	04	06	19	46	20	26	21	00
T H U R S D A Y	10	328	23.7		13.7	154	58.2	3.9	18	00.3	4.6	61.2	52	02	34	03	33	04	15	19	38	20	20	20	56
	11	343	23.7		13.1	169	21.1	3.9	17	55.7	4.7	61.2	50	02	51	03	44	04	23	19	31	20	15	20	52
	12	358	23.7	N19	12.6	183	44.0	4.0	S17	51.0	4.9	61.2	45	03	22	04	06	04	40	19	16	20	03	20	43
	13	13	23.8		12.0	198	07.0	3.9	17	46.1	5.0	61.2	N 40	03	45	04	23	04	54	19	04	19	53	20	36
	14	28	23.8		11.4	212	29.9	4.0	17	41.1	5.1	61.2	35	04	04	04	38	05	06	18	53	19	44	20	30
	15	43	23.8	..	10.9	226	52.9	4.0	17	36.0	5.3	61.2	30	04	19	04	50	05	16	18	44	19	37	20	25
	16	58	23.8		10.3	241	15.9	4.0	17	30.7	5.4	61.2	20	04	42	05	10	05	34	18	28	19	24	20	16
	17	73	23.8		09.7	255	38.9	4.1	17	25.3	5.5	61.3	N 10	05	00	05	27	05	49	18	14	19	12	20	07
	18	88	23.8	N19	09.2	270	02.0	4.0	S17	19.8	5.6	61.3	0	05	16	05	41	06	03	18	01	19	01	20	00
	19	103	23.8		08.6	284	25.0	4.2	17	14.2	5.8	61.3	S 10	05	29	05	55	06	17	17	47	18	51	19	52
20	118	23.8		08.0	298	48.2	4.1	17	08.4	5.9	61.3	20	05	42	06	08	06	32	17	33	18	39	19	44	
21	133	23.8	..	07.5	313	11.3	4.2	17	02.5	6.0	61.3	30	05	54	06	23	06	48	17	17	18	26	19	34	
22	148	23.8		06.9	327	34.5	4.2	16	56.5	6.2	61.3	35	06	00	06	31	06	58	17	08	18	18	19	29	
23	163	23.8		06.3	341	57.7	4.2	16	50.3	6.3	61.3	40	06	07	06	40	07	09	16	57	18	09	19	23	
24												45	06	14	06	50	07	22	16	45	17	59	19	15	
28	00	178	23.8	N19	05.7	356	20.9	4.3	S16	44.0	6.4	61.3	S 50	06	22	07	02	07	37	16	29	17	47	19	07
	01	193	23.9		05.2	10	44.2	4.3	16	37.6	6.5	61.3	52	06	26	07	07	07	45	16	22	17	41	19	03
	02	208	23.9		04.6	25	07.5	4.4	16	31.1	6.7	61.3	54	06	30	07	13	07	53	16	14	17	34	18	
	03	223	23.9	..	04.0	39	30.9	4.4	16	24.4	6.8	61.3	56	06	34	07	19	08	02	16	05	17	27	18	
	04	238	23.9		03.5	53	54.3	4.4	16	17.6	6.8	61.3	58	06	38	07	27	08	12	15	55	17	19	18	
	05	253	23.9		02.9	68	17.7	4.5	16	10.8	7.1	61.3	S 60	06	43	07	35	08	24	15	43	17	10	18	
	06	268	23.9	N19	02.3	82	41.2	4.6	S16	03.7	7.1	61.3													
	07	283	23.9		01.7	97	04.8	4.5	15	56.6	7.2	61.3	Lat.	Sun-set	Twilight	Moonset									
	08	298	23.9		01.1	111	28.3	4.7	15	49.4	7.4	61.3			Civil	Naut.	27	28	29	30					
	09	313	23.9	..	00.6	125	52.0	4.6	15	42.0	7.5	61.3													
F I D A Y	10	328	24.0	19	00.0	140	15.6	4.8	15	34.5	7.6	61.3													
	11	343	24.0	18	59.4	154	39.4	4.7	15	26.9	7.7	61.3													
	12	358	24.0	N18	58.8	169	03.1	4.9	S15	19.2	7.8	61.3	N 72	□	□	□	■		01	49	04	18	06	31	
	13	13	24.0		58.3	183	27.0	4.8	15	11.4	7.9	61.3	N 70	23	25	///	///	00	40	02	41	04	45	06	45
	14	28	24.0		57.7	197	50.8	5.0	15	03.5	8.0	61.3	68	22	16	///	///	01	30	03	13	05	04	06	
	15	43	24.0	..	57.1	212	14.8	5.0	14	55.5	8.1	61.3	66	21	41	///	///	02	02	03	36	05	20	07	
	16	58	24.0		56.5	226	38.8	5.0	14	47.4	8.3	61.3	64	21	16	22	56	///	02	25	03	55	05	33	
	17	73	24.1		55.9	241	02.8	5.1	14	39.1	8.3	61.3	62	20	57	22	12	///	02	44	04	10	05	43	
	18	88	24.1	N18	55.4	255	26.9	5.1	S14	30.8	8.4	61.3	60	20	41	21	44	///	02	59	04	22	05	53	
	19	103	24.1		54.8	269	51.0	5.2	14	22.4	8.6	61.3	N 58	20	27	21	23	23	03	12	04	33	06	00	
20	118	24.1		54.2	284	15.2	5.3	14	13.8	8.6	61.3	56	20	16	21	06	22	23	03	23	04	42	06		
21	133	24.1	..	53.6	298	39.5	5.3	14	05.2	8.8	61.3	54	20	06	20	51	21	57	03	33	04	51	06		
22	148	24.1		53.0	313	03.8	5.4	13	56.4	8.8	61.3	52	19	57	20	39	21	37	03	42	04	58	06		
23	163	24.1		52.4	327	28.2	5.5	13	47.6	8.9	61.3	50	19	49	20	28	21	21	03	50	05	05	06		
24												45	19	32	20	06	20	50	04	07	05	19	06	35	
29	00	178	24.2	N18	51.9	341	52.7	5.5	S13	38.7	9.0	61.3	N 40	19	18	19	49	20	27	04	20	05	31	06	44
	01	193	24.2		51.3	356	17.2	5.5	13	29.7	9.2	61.2	35	19	06	19	34	20	09	04	32	05	41	06	
	02	208	24.2		50.7	10	41.7	5.6	13	20.5	9.2	61.2	30	18	56	19	22	19	54	04	42	05	49	06	
	03	223	24.2	..	50.1	25	06.3	5.7	13	11.3	9.2	61.2	20	18	39	19	02	19	30	04	59	06	05	07	
	04	238	24.2		49.5	39	31.0	5.8	13	02.1	9.4	61.2	N 10	18	24	18	46	19	12	05	14	06	18	07	
	05	253	24.3		48.9	53	55.8	5.8	12	52.7	9.5	61.2	0	18	10	18	32	18	57	05	28	06	30	07	
	06	268	2																						

		ARIES		VENUS -3.6		MARS +1.9		JUPITER -2.3		SATURN +0.3		STARS			
G.M.T.		G.H.A.	G.H.A.	Dec.	G.H.A.	Dec.	G.H.A.	Dec.	G.H.A.	Dec.	G.H.A.	Dec.	Name	S.H.A.	Dec.
SUNDAY	30 00	307 23.4	222 59.5	N 21 13.6	137 27.4	N 5 11.6	3 21.0	S 20 24.3	9 36.3	S 21 09.6			Acamar	315 48.2	S 40 27.3
	01	322 25.9	237 59.0	13.8	152 28.4	11.0	18 23.8	24.4	24 38.9	09.7			Achernar	335 55.9	S 57 25.7
	02	337 28.4	252 58.5	14.1	167 29.4	10.3	33 26.5	24.4	39 41.6	09.7			Acrux	173 53.5	S 62 53.3
	03	352 30.8	267 58.0	14.3	182 30.5	09.7	48 29.3	24.5	54 44.2	09.7			Adhara	255 43.7	S 28 55.1
	04	7 33.3	282 57.4	14.5	197 31.5	09.1	63 32.1	24.6	69 46.9	09.8			Aldebaran	291 34.6	N 16 25.9
	05	22 35.8	297 56.9	14.7	212 32.6	08.4	78 34.9	24.7	84 49.5	09.8					
	06	37 38.2	312 56.4	N 21 15.0	227 33.6	N 5 07.8	93 37.7	S 20 24.7	99 52.2	S 21 09.8			Alioth	166 55.4	N 56 10.5
	07	52 40.7	327 55.8	15.2	242 34.7	07.2	108 40.5	24.8	114 54.8	09.9			Alkaid	153 29.9	N 49 30.7
	08	67 43.1	342 55.3	15.4	257 35.7	06.5	123 43.3	24.9	129 57.5	09.9			Al Na'ir	28 32.5	S 47 08.7
	09	82 45.6	357 54.8	15.6	272 36.8	05.9	138 46.1	25.0	145 00.1	10.0			Alnilam	276 26.4	S 1 13.5
	10	97 48.1	12 54.2	15.9	287 37.8	05.3	153 48.9	25.1	160 02.8	10.0			Alphard	218 34.9	S 8 29.4
	11	112 50.5	27 53.7	16.1	302 38.9	04.7	168 51.7	25.1	175 05.4	10.0					
	12	127 53.0	42 53.2	N 21 16.3	317 39.9	N 5 04.0	183 54.5	S 20 25.2	190 08.1	S 21 10.1			Alphecca	126 44.1	N 26 50.9
	13	142 55.5	57 52.7	16.5	332 41.0	03.4	198 57.3	25.3	205 10.7	10.1			Alpheratz	358 23.9	N 28 52.6
	14	157 57.9	72 52.1	16.7	347 42.0	02.8	214 00.1	25.4	220 13.4	10.1			Altair	62 46.2	N 8 46.1
	15	173 00.4	87 51.6	17.0	2 43.1	02.1	229 02.9	25.4	235 16.0	10.2			Ankaa	353 54.2	S 42 30.7
	16	188 02.9	102 51.1	17.2	17 44.1	01.5	244 05.7	25.5	250 18.7	10.2			Antares	113 14.2	S 26 20.8
	17	203 05.3	117 50.5	17.4	32 45.2	00.9	259 08.5	25.6	265 21.3	10.2					
18	218 07.8	132 50.0	N 21 17.6	47 46.2	N 5 00.2	274 11.3	S 20 25.7	280 24.0	S 21 10.3			Arcturus	146 31.5	N 19 23.2	
19	233 10.2	147 49.4	17.8	62 47.3	4 59.6	289 14.1	25.7	295 26.6	10.3			Atria	108 50.9	S 68 57.7	
20	248 12.7	162 48.9	18.0	77 48.3	59.0	304 16.9	25.8	310 29.3	10.4			Avior	234 34.7	S 59 23.1	
21	263 15.2	177 48.4	18.2	92 49.4	58.3	319 19.7	25.9	325 31.9	10.4			Bellatrix	279 14.3	N 6 18.9	
22	278 17.6	192 47.8	18.5	107 50.4	57.7	334 22.5	26.0	340 34.6	10.4			Betelgeuse	271 44.0	N 7 24.0	
23	293 20.1	207 47.3	18.7	122 51.5	57.1	349 25.3	26.0	355 37.3	10.5						
MONDAY	31 00	308 22.6	222 46.8	N 21 18.9	137 52.5	N 4 56.5	4 28.1	S 20 26.1	10 39.9	S 21 10.5			Canopus	264 14.0	S 52 40.4
	01	323 25.0	237 46.2	19.1	152 53.5	55.8	19 30.9	26.2	25 42.6	10.5			Capella	281 32.8	N 45 57.4
	02	338 27.5	252 45.7	19.3	167 54.6	55.2	34 33.7	26.3	40 45.2	10.6			Deneb	49 57.7	N 45 08.6
	03	353 30.0	267 45.1	19.5	182 55.6	54.6	49 36.5	26.3	55 47.9	10.6			Denebola	183 13.9	N 14 47.4
	04	8 32.4	282 44.6	19.7	197 56.7	53.9	64 39.3	26.4	70 50.5	10.7			Diphda	349 35.1	S 18 11.7
	05	23 34.9	297 44.1	19.9	212 57.7	53.3	79 42.1	26.5	85 53.2	10.7					
	06	38 37.4	312 43.5	N 21 20.1	227 58.8	N 4 52.7	94 44.9	S 20 26.6	100 55.8	S 21 10.7			Dubhe	194 40.4	N 61 57.8
	07	53 39.8	327 43.0	20.3	242 59.8	52.0	109 47.7	26.6	115 58.5	10.8			Elnath	279 02.5	N 28 34.4
	08	68 42.3	342 42.4	20.5	258 00.9	51.4	124 50.4	26.7	131 01.1	10.8			Eltanin	91 04.0	N 51 29.9
	09	83 44.7	357 41.9	20.7	273 01.9	50.8	139 53.2	26.8	146 03.8	10.8			Enif	34 25.3	N 9 42.0
	10	98 47.2	12 41.4	20.9	288 03.0	50.1	154 56.0	26.9	161 06.4	10.9			Fomalhaut	16 06.9	S 29 49.4
	11	113 49.7	27 40.8	21.1	303 04.0	49.5	169 58.8	27.0	176 09.1	10.9					
	12	128 52.1	42 40.3	N 21 21.3	318 05.1	N 4 48.9	185 01.6	S 20 27.0	191 11.7	S 21 10.9			Gacrux	172 44.9	S 56 54.0
	13	143 54.6	57 39.7	21.5	333 06.1	48.2	200 04.4	27.1	206 14.4	11.0			Gienah	176 32.9	S 17 19.7
	14	158 57.1	72 39.2	21.7	348 07.2	47.6	215 07.2	27.2	221 17.0	11.0			Hadar	149 43.6	S 60 11.4
	15	173 59.5	87 38.6	21.9	3 08.2	47.0	230 10.0	27.3	236 19.7	11.0			Hamal	328 45.0	N 23 16.7
	16	189 02.0	102 38.1	22.1	18 09.3	46.3	245 12.8	27.3	251 22.3	11.1			Kaus Aust.	84 35.5	S 34 24.2
	17	204 04.5	117 37.5	22.3	33 10.3	45.7	260 15.6	27.4	266 25.0	11.1					
18	219 06.9	132 37.0	N 21 22.5	48 11.3	N 4 45.1	275 18.4	S 20 27.5	281 27.6	S 21 11.2			Kochab	137 18.3	N 74 19.2	
19	234 09.4	147 36.5	22.7	63 12.4	44.4	290 21.2	27.6	296 30.3	11.2			Markab	14 17.2	N 14 59.9	
20	249 11.9	162 35.9	22.9	78 13.4	43.8	305 24.0	27.6	311 32.9	11.2			Menkar	314 56.2	N 3 56.3	
21	264 14.3	177 35.4	23.1	93 14.5	43.2	320 26.8	27.7	326 35.6	11.3			Menkent	148 53.9	S 36 10.9	
22	279 16.8	192 34.8	23.3	108 15.5	42.5	335 29.6	27.8	341 38.2	11.3			Miaplacidus	221 48.9	S 69 33.6	
23	294 19.2	207 34.3	23.5	123 16.6	41.9	350 32.4	27.9	356 40.9	11.3						
TUESDAY	00	309 21.7	222 33.7	N 21 23.7	138 17.6	N 4 41.3	5 35.2	S 20 27.9	11 43.5	S 21 11.4			Mirfak	309 36.7	N 49 43.2
	01	324 24.2	237 33.2	23.8	153 18.7	40.6	20 38.0	28.0	26 46.2	11.4			Nunki	76 46.6	S 26 20.6
	02	339 26.6	252 32.6	24.0	168 19.7	40.0	35 40.8	28.1	41 48.8	11.4			Peacock	54 20.4	S 56 51.5
	03	354 29.1	267 32.1	24.2	183 20.8	39.4	50 43.6	28.2	56 51.5	11.5			Pollux	244 16.1	N 28 07.2
	04	9 31.6	282 31.5	24.4	198 21.8	38.7	65 46.4	28.2	71 54.1	11.5			Procyon	245 41.1	N 5 19.5
	05	24 34.0	297 31.0	24.6	213 22.9	38.1	80 49.1	28.3	86 56.8	11.6					
	06	39 36.5	312 30.4	N 21 24.8	228 23.9	N 4 37.5	95 51.9	S 20 28.4	101 59.4	S 21 11.6			Rasalhague	96 42.6	N 12 35.5
	07	54 39.0	327 29.9	25.0	243 24.9	36.8	110 54.7	28.5	117 02.1	11.6			Regulus	208 25.5	N 12 09.5
	08	69 41.4	342 29.3	25.1	258 26.0	36.2	125 57.5	28.5	132 04.7	11.7			Rigel	281 50.0	S 8 14.7
	09	84 43.9	357 28.8	25.3	273 27.0	35.6	141 00.3	28.6	147 07.4	11.7			Rigel Kent.	140 45.3	S 60 40.7
	10	99 46.3	12 28.2	25.5	288 28.1	34.9	156 03.1	28.7	162 10.0	11.7			Sabik	102 57.3	S 15 40.6
	11	114 48.8	27 27.7	25.7	303 29.1	34.3	171 05.9	28.8	177 12.7	11.8					
	12	129 51.3	42 27.1	N 21 25.9	318 30.2	N 4 33.7	186 08.7	S 20 28.8	192 15.3	S 21 11.8			Schedar	350 25.0	N 56 19.3
	13	144 53.7	57 26.6	26.0	333 31.2	33.0	201 11.5	28.9	207 18.0	11.8			Shaula	97 14.9	S 37 04.6
	14	159 56.2	72 26.0	26.2	348 32.3	32.4	216 14.3	29.0	222 20.6	11.9			Sirius	259 08.6	S 16 39.7
	15	174 58.7	87 25.5	26.4	3 33.3	31.7	231 17.1	29.1	237 23.3	11.9			Spica	159 12.7	S 10 57.6
	16	190 01.1	102 24.9	26.6	18 34.4	31.1	246 19.9	29.1	252 25.9	11.9			Suhail	223 21.7	S 43 16.6
	17	205 03.6	117 24.3	26.7	33 35.4	30.5	261 22.7	29.2	267 28.6	12.0					
18	220 06.1	132 23.8	N 21 26.9	48 36.4	N 4 29.8	276 25.5	S 20 29.3	282 31.2	S 21 12.0			Vega	81 05.1	N 38 45.1	
19	235 08.5	147 23.2	27.1	63 37.5	29.2	291 28.3	29.4	297 33.9	12.1			Zuben'ubi	137 48.9	S 15 52.9	
20	250 11.0	162 22.7	27.2	78 38.5	28.6	306 31.1	29.4	312 36.5	12.1						
21	265 13.5	177 22.1	27.4	93 39.6	27.9	321 33.9	29.5	327 39.2	12.1						
22	280 15.9	192 21.6	27.6	108 40.6	27.3	336 36.7	29.6	342 41.8	12.2						
23	295 18.4	207 21.0	27.7	123 41.7	26.7	351 39.4	29.7	357 44.5	12.2						
Mer. Pass. h^m 3 25.9		v -0.5		d 0.2	v 1.0		d 0.6	v 2.8		d 0.1	v 2.7		d		

G.M.T.	ARIES			VENUS -3.6			MARS +1.9			JUPITER -2.3			SATURN +0.4			STARS		
	G.H.A.	G.H.A.	Dec.	G.H.A.	G.H.A.	Dec.	G.H.A.	G.H.A.	Dec.	G.H.A.	G.H.A.	Dec.	G.H.A.	G.H.A.	Dec.	Name	S.H.A.	Dec.
d h																		
2 00	310 20.8	222 20.4	N21 27.9	138 42.7	N 4 26.0		6 42.2	S20 29.7		12 47.1	S21 12.2		Acamar	315 48.2	S 40 27.3			
01	325 23.3	237 19.9	28.1	153 43.8	25.4		21 45.0	29.8		27 49.8	12.3		Achernar	335 55.8	S 57 25.7			
02	340 25.8	252 19.3	28.2	168 44.8	24.8		36 47.8	29.9		42 52.4	12.3		Acrux	173 53.5	S 62 53.3			
03	355 28.2	267 18.8	.. 28.4	183 45.9	.. 24.1		51 50.6	.. 30.0		57 55.1	.. 12.3		Adhara	255 43.7	S 28 55.1			
04	10 30.7	282 18.2	28.6	198 46.9	23.5		66 53.4	30.0		72 57.7	12.4		Aldebaran	291 34.6	N 16 25.9			
05	25 33.2	297 17.7	28.7	213 47.9	22.9		81 56.2	30.1		88 00.4	12.4							
06	40 35.6	312 17.1	N21 28.9	228 49.0	N 4 22.2		96 59.0	S20 30.2		103 03.0	S21 12.5		Alioth	166 55.4	N 56 10.5			
07	55 38.1	327 16.5	29.1	243 50.0	21.6		112 01.8	30.3		118 05.7	12.5		Alkaid	153 29.9	N 49 30.7			
08	70 40.6	342 16.0	29.2	258 51.1	20.9		127 04.6	30.3		133 08.3	12.5		Al Na'ir	28 32.5	S 47 08.7			
09	85 43.0	357 15.4	.. 29.4	273 52.1	.. 20.3		142 07.4	.. 30.4		148 11.0	.. 12.6		Alnilam	276 26.4	S 1 13.5			
10	100 45.5	12 14.9	29.5	288 53.2	19.7		157 10.2	30.5		163 13.6	12.6		Alphard	218 34.9	S 8 29.4			
11	115 47.9	27 14.3	29.7	303 54.2	19.0		172 13.0	30.6		178 16.3	12.6							
12	130 50.4	42 13.7	N21 29.8	318 55.2	N 4 18.4		187 15.8	S20 30.6		193 18.9	S21 12.7		Alphecca	126 44.2	N 26 50.9			
13	145 52.9	57 13.2	30.0	333 56.3	17.8		202 18.6	30.7		208 21.6	12.7		Alpheratz	358 23.9	N 28 52.6			
14	160 55.3	72 12.6	30.2	348 57.3	17.1		217 21.3	30.8		223 24.2	12.7		Altair	62 46.2	N 8 46.1			
15	175 57.8	87 12.0	.. 30.3	3 58.4	.. 16.5		232 24.1	.. 30.8		238 26.9	.. 12.8		Ankaa	353 54.2	S 42 30.7			
16	191 00.3	102 11.5	30.5	18 59.4	15.9		247 26.9	30.9		253 29.5	12.8		Antares	113 14.2	S 26 20.8			
17	206 02.7	117 10.9	30.6	34 00.5	15.2		262 29.7	31.0		268 32.2	12.8							
18	221 05.2	132 10.3	N21 30.8	49 01.5	N 4 14.6		277 32.5	S20 31.1		283 34.8	S21 12.9		Arcturus	146 31.6	N 19 23.2			
19	236 07.7	147 09.8	30.9	64 02.6	14.0		292 35.3	31.1		298 37.5	12.9		Atria	108 50.9	S 68 57.7			
20	251 10.1	162 09.2	31.1	79 03.6	13.3		307 38.1	31.2		313 40.1	13.0		Avior	234 34.7	S 59 23.1			
21	266 12.6	177 08.6	.. 31.2	94 04.6	.. 12.7		322 40.9	.. 31.3		328 42.8	.. 13.0		Bellatrix	279 14.3	N 6 18.9			
22	281 15.1	192 08.1	31.4	109 05.7	12.0		337 43.7	31.4		343 45.4	13.0		Betelgeuse	271 44.0	N 7 24.0			
23	296 17.5	207 07.5	31.5	124 06.7	11.4		352 46.5	31.4		358 48.1	13.1							
3 00	311 20.0	222 06.9	N21 31.7	139 07.8	N 4 10.8		7 49.3	S20 31.5		13 50.7	S21 13.1		Canopus	264 14.0	S 52 40.4			
01	326 22.4	237 06.4	31.8	154 08.8	10.1		22 52.1	31.6		28 53.4	13.1		Capella	281 32.7	N 45 57.4			
02	341 24.9	252 05.8	31.9	169 09.9	09.5		37 54.9	31.7		43 56.0	13.2		Deneb	49 57.7	N 45 08.6			
03	356 27.4	267 05.2	.. 32.1	184 10.9	.. 08.9		52 57.6	.. 31.7		58 58.7	.. 13.2		Denebola	183 13.9	N 14 47.4			
04	11 29.8	282 04.7	32.2	199 11.9	08.2		68 00.4	31.8		74 01.3	13.2		Diphda	349 35.1	S 18 11.7			
05	26 32.3	297 04.1	32.4	214 13.0	07.6		83 03.2	31.9		89 03.9	13.3							
06	41 34.8	312 03.5	N21 32.5	229 14.0	N 4 06.9		98 06.0	S20 32.0		104 06.6	S21 13.3		Dubhe	194 40.4	N 61 57.8			
07	56 37.2	327 03.0	32.7	244 15.1	06.3		113 08.8	32.0		119 09.2	13.3		Elnath	279 02.5	N 28 34.4			
08	71 39.7	342 02.4	32.8	259 16.1	05.7		128 11.6	32.1		134 11.9	13.4		Eltanin	91 04.0	N 51 29.9			
09	86 42.2	357 01.8	.. 32.9	274 17.2	.. 05.0		143 14.4	.. 32.2		149 14.5	.. 13.4		Enif	34 25.3	N 9 42.0			
10	101 44.6	12 01.3	33.1	289 18.2	04.4		158 17.2	32.2		164 17.2	13.5		Fomalhaut	16 06.9	S 29 49.4			
11	116 47.1	27 00.7	33.2	304 19.2	03.8		173 20.0	32.3		179 19.8	13.5							
12	131 49.6	42 00.1	N21 33.3	319 20.3	N 4 03.1		188 22.8	S20 32.4		194 22.5	S21 13.5		Gacrux	172 44.9	S 56 54.0			
13	146 52.0	56 59.5	33.5	334 21.3	02.5		203 25.6	32.5		209 25.1	13.6		Gienah	176 32.9	S 17 19.7			
14	161 54.5	71 59.0	33.6	349 22.4	01.8		218 28.3	32.5		224 27.8	13.6		Hadar	149 43.7	S 60 11.4			
15	176 56.9	86 58.4	.. 33.7	4 23.4	.. 01.2		233 31.1	.. 32.6		239 30.4	.. 13.6		Hamal	328 45.0	N 23 16.7			
16	191 59.4	101 57.8	33.9	19 24.5	4 00.6		248 33.9	32.7		254 33.1	13.7		Kaus Aust.	84 35.5	S 34 24.2			
17	207 01.9	116 57.3	34.0	34 25.5	3 59.9		263 36.7	32.8		269 35.7	13.7							
18	222 04.3	131 56.7	N21 34.1	49 26.5	N 3 59.3		278 39.5	S20 32.8		284 38.4	S21 13.7		Kochab	137 18.3	N 74 19.2			
19	237 06.8	146 56.1	34.3	64 27.6	58.6		293 42.3	32.9		299 41.0	13.8		Markab	14 17.1	N 14 59.9			
20	252 09.3	161 55.5	34.4	79 28.6	58.0		308 45.1	33.0		314 43.7	13.8		Menkar	314 56.1	N 3 56.3			
21	267 11.7	176 55.0	.. 34.5	94 29.7	.. 57.4		323 47.9	.. 33.1		329 46.3	.. 13.8		Menkent	148 53.9	S 36 10.9			
22	282 14.2	191 54.4	34.6	109 30.7	56.7		338 50.7	33.1		344 48.9	13.9		Miaplacidus	221 48.9	S 69 33.6			
23	297 16.7	206 53.8	34.8	124 31.8	56.1		353 53.5	33.2		359 51.6	13.9							
4 00	312 19.1	221 53.2	N21 34.9	139 32.8	N 3 55.4		8 56.3	S20 33.3		14 54.2	S21 14.0		Mirfak	309 36.6	N 49 43.2			
01	327 21.6	236 52.7	35.0	154 33.8	54.8		23 59.0	33.3		29 56.9	14.0		Nunki	76 46.6	S 26 20.6			
02	342 24.1	251 52.1	35.1	169 34.9	54.2		39 01.8	33.4		44 59.5	14.0		Peacock	54 20.4	S 56 51.5			
03	357 26.5	266 51.5	.. 35.2	184 35.9	.. 53.5		54 04.6	.. 33.5		60 02.2	.. 14.1		Pollux	244 16.0	N 28 07.2			
04	12 29.0	281 50.9	35.4	199 37.0	52.9		69 07.4	33.6		75 04.8	14.1		Procyon	245 41.1	N 5 19.5			
05	27 31.4	296 50.4	35.5	214 38.0	52.2		84 10.2	33.6		90 07.5	14.1							
06	42 33.9	311 49.8	N21 35.6	229 39.1	N 3 51.6		99 13.0	S20 33.7		105 10.1	S21 14.2		Rasalhague	96 42.6	N 12 35.5			
07	57 36.4	326 49.2	35.7	244 40.1	51.0		114 15.8	33.8		120 12.8	14.2		Regulus	208 25.5	N 12 09.4			
08	72 38.8	341 48.6	35.8	259 41.1	50.3		129 18.6	33.9		135 15.4	14.2		Rigel	281 50.0	S 8 14.7			
09	87 41.3	356 48.0	.. 36.0	274 42.2	.. 49.7		144 21.4	.. 33.9		150 18.1	.. 14.3		Rigel Kent.	140 45.3	S 60 40.7			
10	102 43.8	11 47.5	36.1	289 43.2	49.1		159 24.2	34.0		165 20.7	14.3		Sabik	102 57.3	S 15 40.6			
11	117 46.2	26 46.9	36.2	304 44.3	48.4		174 26.9	34.1		180 23.4	14.3							
12	132 48.7	41 46.3	N21 36.3	319 45.3	N 3 47.8		189 29.7	S20 34.2		195 26.0	S21 14.4		Schedar	350 25.0	N 56 19.3			
13	147 51.2	56 45.7	36.4	334 46.3	47.1		204 32.5	34.2		210 28.6	14.4		Shaula	97 14.9	S 37 04.6			
14	162 53.6	71 45.1	36.5	349 47.4	46.5		219 35.3	34.3		225 31.3	14.4		Sirius	259 08.6	S 16 39.7			
15	177 56.1	86 44.6	.. 36.6	4 48.4	.. 45.9		234 38.1	.. 34.4		240 33.9	.. 14.5		Spica	159 12.7	S 10 57.6			
16	192 58.5	101 44.0	36.7	19 49.5	45.2		249 40.9	34.4		255 36.6	14.5		Suhail	223 21.7	S 43 16.6			
17	208 01.0	116 43.4	36.8	34 50.5	44.6		264 43.7	34.5		270 39.2	14.5							
18	223 03.5	131 42.8	N21 36.9	49 51.5	N 3 43.9		279 46.5	S20 34.6		285 41.9	S21 14.6		Vega	81 05.1	N 38 45.1			
19	238 05.9	146 42.2	37.1	64 52.6	43.3		294 49.2	34.7		300 44.5	14.6		Zuben'ubi	137 48.9	S 15 52.9			
20	253 08.4	161 41.7	37.2	79 53.6	42.7		309 52.0	34.7		315 47.2	14.6							
21	268 10.9	176 41.1	.. 37.3	94 54.7	.. 42.0		324 54.8	.. 34.8		330 49.8	.. 14.7			</				

G.M.T.		SUN		MOON				Lat.	Twilight		Sun-rise	Moonrise									
		G.H.A.	Dec.	G.H.A.	<i>v</i>	Dec.	<i>d</i>		H.P.	Naut.		Civil	2	3	4	5					
d	h	°	'	°	'	°	'	°	'	°	'	h	m	h	m	h	m	h	m		
2	00	178	26.9	N17	53.2	289	39.0	10.6	N	4	08.8	11.1	58.6	N 72	□	□	□	21	44		
	01	193	27.0		52.6	304	08.6	10.7		4	19.9	11.0	58.6	N 70	///	///	///	21	56		
	02	208	27.0		52.0	318	38.3	10.7		4	30.9	11.1	58.5	68	///	///	///	22	10		
	03	223	27.1	..	51.3	333	08.0	10.7		4	42.0	11.0	58.5	66	///	00 49	02 52	22	13		
	04	238	27.1		50.7	347	37.7	10.7		4	53.0	10.9	58.5	64	///	01 49	03 13	22	19		
WEDNESDAY	05	253	27.1		50.0	2	07.4	10.8		5	03.9	10.9	58.4	62	///	02 22	03 30	22	25		
	06	268	27.2	N17	49.4	16	37.2	10.8	N	5	14.8	10.9	58.4	60	00 44	02 45	03 45	22	30		
	07	283	27.2		48.8	31	07.0	10.8		5	25.7	10.8	58.4	N 58	01 39	03 04	03 57	22	35		
	08	298	27.3		48.1	45	36.8	10.9		5	36.5	10.8	58.3	56	02 09	03 19	04 07	22	39		
	09	313	27.3	..	47.5	60	06.7	10.8		5	47.3	10.7	58.3	54	02 31	03 32	04 16	22	42		
	10	328	27.4		46.8	74	36.5	10.9		5	58.0	10.7	58.2	52	02 48	03 43	04 24	22	45		
	11	343	27.4		46.2	89	06.4	10.9		6	08.7	10.7	58.2	50	03 03	03 53	04 32	22	48		
	12	358	27.4	N17	45.6	103	36.3	10.9	N	6	19.4	10.5	58.2	45	03 31	04 14	04 47	22	55		
	13	13	27.5		44.9	118	06.2	11.0		6	29.9	10.6	58.1	N 40	03 53	04 30	05 00	23	00		
	14	28	27.5		44.3	132	36.2	10.9		6	40.5	10.5	58.1	35	04 09	04 43	05 10	23	05		
	15	43	27.6	..	43.6	147	06.1	11.0		6	51.0	10.4	58.1	30	04 23	04 54	05 20	23	09		
	16	58	27.6		43.0	161	36.1	11.0		7	01.4	10.4	58.0	20	04 45	05 12	05 36	23	16		
	17	73	27.7		42.4	176	06.1	11.0		7	11.8	10.4	58.0	N 10	05 02	05 28	05 50	23	23		
	18	88	27.7	N17	41.7	190	36.1	11.1	N	7	22.2	10.3	57.9	0	05 16	05 41	06 03	23	29		
	19	103	27.8		41.1	205	06.2	11.0		7	32.5	10.2	57.9	S 10	05 28	05 53	06 15	23	35		
	20	118	27.8		40.4	219	36.2	11.1		7	42.7	10.2	57.9	20	05 39	06 06	06 29	23	42		
	21	133	27.8	..	39.8	234	06.3	11.1		7	52.9	10.1	57.8	30	05 50	06 19	06 44	23	49		
	22	148	27.9		39.1	248	36.4	11.1		8	03.0	10.1	57.8	35	05 56	06 26	06 53	23	54		
23	163	27.9		38.5	263	06.5	11.1		8	13.1	10.0	57.8	40	06 02	06 34	07 03	23	59			
3	00	178	28.0	N17	37.8	277	36.6	11.1	N	8	23.1	10.0	57.7	S 50	06 15	06 54	07 29	24	11		
	01	193	28.0		37.2	292	06.7	11.1		8	33.1	9.9	57.7	52	06 18	06 59	07 35	24	14		
	02	208	28.1		36.5	306	36.8	11.2		8	43.0	9.8	57.7	54	06 21	07 04	07 43	24	18		
	03	223	28.1	..	35.9	321	07.0	11.1		8	52.8	9.8	57.6	56	06 24	07 09	07 51	24	22		
	04	238	28.2		35.2	335	37.1	11.2		9	02.6	9.7	57.6	58	06 28	07 16	08 00	24	26		
THURSDAY	05	253	28.2		34.6	350	07.3	11.2		9	12.3	9.7	57.5	S 60	06 32	07 23	08 11	24	31		
	06	268	28.3	N17	33.9	4	37.5	11.2	N	9	22.0	9.6	57.5								
	07	283	28.3		33.3	19	07.7	11.2		9	31.6	9.5	57.5	Lat.	Sun-set	Twilight	Moonset				
	08	298	28.4		32.6	33	37.9	11.2		9	41.1	9.5	57.4			Civil	2	3	4	5	
	09	313	28.4	..	32.0	48	08.1	11.2		9	50.6	9.5	57.4								
	10	328	28.5		31.3	62	38.3	11.3		10	00.1	9.3	57.4		°	h m	h m	h m	h m	h m	
	11	343	28.5		30.7	77	08.6	11.2		10	09.4	9.3	57.3	N 72	□	□	□	12	25		
	12	358	28.6	N17	30.0	91	38.8	11.2	N	10	18.7	9.2	57.3	N 70	22 25	///	///	12	16		
	13	13	28.6		29.4	106	09.0	11.3		10	27.9	9.2	57.3	68	21 45	///	///	12	08		
	14	28	28.7		28.7	120	39.3	11.3		10	37.1	9.1	57.2	66	21 17	23 12	///	12	02		
	15	43	28.7	..	28.1	135	09.6	11.2		10	46.2	9.0	57.2	64	20 57	22 18	///	11	57		
	16	58	28.8		27.4	149	39.8	11.3		10	55.2	9.0	57.2	62	20 40	21 47	///	11	52		
	17	73	28.8		26.8	164	10.1	11.3		11	04.2	8.9	57.1	60	20 26	21 25	23 17	11	48		
	18	88	28.9	N17	26.1	178	40.4	11.3	N	11	13.1	8.8	57.1	N 58	20 14	21 06	22 29	11	44		
	19	103	28.9		25.4	193	10.7	11.2		11	21.9	8.8	57.1	56	20 04	20 51	22 01	11	41		
	20	118	29.0		24.8	207	40.9	11.3		11	30.7	8.7	57.0	54	19 55	20 39	21 39	11	39		
	21	133	29.0	..	24.1	222	11.2	11.3		11	39.4	8.6	57.0	52	19 47	20 28	21 22	11	36		
	22	148	29.1		23.5	236	41.5	11.3		11	48.0	8.6	57.0	50	19 40	20 18	21 08	11	34		
23	163	29.1		22.8	251	11.8	11.3		11	56.6	8.4	56.9	45	19 24	19 58	20 40	11	29			
4	00	178	29.2	N17	22.1	265	42.1	11.3	N	12	05.0	8.4	56.9	N 40	19 12	19 42	20 19	11	25		
	01	193	29.2		21.5	280	12.4	11.4		12	13.4	8.4	56.9	35	19 01	19 29	20 02	11	21		
	02	208	29.3		20.8	294	42.8	11.3		12	21.8	8.2	56.8	30	18 52	19 18	19 49	11	18		
	03	223	29.3	..	20.2	309	13.1	11.3		12	30.0	8.2	56.8	20	18 36	18 59	19 27	11	12		
	04	238	29.4		19.5	323	43.4	11.3		12	38.2	8.2	56.8	N 10	18 22	18 44	19 10	11	08		
FRIDAY	05	253	29.5		18.8	338	13.7	11.3		12	46.4	8.0	56.7	0	18 10	18 31	18 56	11	03		
	06	268	29.5	N17	18.2	352	44.0	11.3	N	12	54.4	8.0	56.7	S 10	17 57	18 19	18 44	10	59		
	07	283	29.6		17.5	7	14.3	11.4		13	02.4	7.9	56.7	20	17 44	18 07	18 33	10	54		
	08	298	29.6		16.9	21	44.7	11.3		13	10.3	7.8	56.6	30	17 29	17 54	18 22	10	48		
	09	313	29.7	..	16.2	36	15.0	11.3		13	18.1	7.7	56.6	35	17 20	17 46	18 17	10	45		
	10	328	29.7		15.5	50	45.3	11.3		13	25.8	7.7	56.6	40	17 10	17 39	18 11	10	42		
	11	343	29.8		14.9	65	15.6	11.4		13	33.5	7.6	56.5	45	16 58	17 30	18 05	10	38		
	12	358	29.8	N17	14.2	79	46.0	11.3	N	13	41.1	7.5	56.5	S 50	16 44	17 19	17 58	10	33		
	13	13	29.9		13.5	94	16.3	11.3		13	48.6	7.5	56.5	52	16 37	17 14	17 55	10	30		
	14	28	30.0		12.9	108	46.6	11.3		13	56.1	7.3	56.4	54	16 30	17 09	17 52	10	28		
	15	43	30.0	..	12.2	123	16.9	11.3		14	03.4	7.3	56.4	56	16 22	17 04	17 49	10	25		
	16	58	30.1		11.5	137	47.2	11.4		14	10.7	7.2	56.4	58	16 13	16 57	17 45	10	22		
	17	73	30.1		10.9	152	17.6	11.3		14	17.9	7.1	56.3	S 60	16 02	16 50	17 41	10	19		
	18	88	30.2	N17	10.2	166	47.9	11.3	N	14	25.0	7.1	56.3								
	19	103	30.2		09.5	181	18.2	11.3		14	32.1	6.9	56.3	Day	SUN		MOON				
	20	118	30.3		08.9	195	48.5	11.3		14	39.0	6.9	56.3		Eqn. of Time	Mer. Pass.	Mer. Upper	Mer. Lower	Age	Phase	
	21	133	30.4	..	08.2	210	18.8	11.4		14	45.9	6.8	56.2		00h	12h	</				



		ARIES		VENUS -3.6		MARS +1.9		JUPITER -2.3		SATURN +0.4		STARS		
G.M.T.		G.H.A.		G.H.A. Dec.		G.H.A. Dec.		G.H.A. Dec.		G.H.A. Dec.		Name	S.H.A.	Dec.
SATURDAY	5 00	313 18.3	221 39.3	N21 37.6	139 57.8	N 3 40.1	10 03.2	S20 35.0	15 57.7	S21 14.8	Acamar	315 48.1	S 40 27.3	
	01	328 20.7	236 38.7	37.7	154 58.8	39.4	25 06.0	35.1	31 00.4	14.8	Achernar	335 55.8	S 57 25.7	
	02	343 23.2	251 38.2	37.8	169 59.9	38.8	40 08.8	35.2	46 03.0	14.8	Acrux	173 53.5	S 62 53.3	
	03	358 25.7	266 37.6	.. 37.9	185 00.9	.. 38.2	55 11.5	.. 35.2	61 05.7	.. 14.9	Adhara	255 43.7	S 28 55.1	
	04	13 28.1	281 37.0	38.0	200 02.0	37.5	70 14.3	35.3	76 08.3	14.9	Aldebaran	291 34.6	N 16 25.9	
	05	28 30.6	296 36.4	38.1	215 03.0	36.9	85 17.1	35.4	91 11.0	15.0				
	06	43 33.0	311 35.8	N21 38.2	230 04.0	N 3 36.2	100 19.9	S20 35.5	106 13.6	S21 15.0	Alioth	166 55.4	N 56 10.4	
	07	58 35.5	326 35.2	38.2	245 05.1	35.6	115 22.7	35.5	121 16.3	15.0	Alkaid	153 29.9	N 49 30.7	
	08	73 38.0	341 34.6	38.3	260 06.1	35.0	130 25.5	35.6	136 18.9	15.1	Al Na'ir	28 32.5	S 47 08.7	
	09	88 40.4	356 34.1	.. 38.4	275 07.2	.. 34.3	145 28.3	.. 35.7	151 21.6	.. 15.1	Alnilam	276 26.4	S 1 13.5	
	10	103 42.9	11 33.5	38.5	290 08.2	33.7	160 31.1	35.7	166 24.2	15.1	Alphard	218 34.9	S 8 29.4	
	11	118 45.4	26 32.9	38.6	305 09.2	33.0	175 33.8	35.8	181 26.8	15.2				
	12	133 47.8	41 32.3	N21 38.7	320 10.3	N 3 32.4	190 36.6	S20 35.9	196 29.5	S21 15.2	Alphecca	126 44.2	N 26 50.9	
	13	148 50.3	56 31.7	38.8	335 11.3	31.8	205 39.4	36.0	211 32.1	15.2	Alpheratz	358 23.9	N 28 52.6	
	14	163 52.8	71 31.1	38.9	350 12.4	31.1	220 42.2	36.0	226 34.8	15.3	Altair	62 46.2	N 8 46.1	
	15	178 55.2	86 30.5	.. 39.0	5 13.4	.. 30.5	235 45.0	.. 36.1	241 37.4	.. 15.3	Ankaa	353 54.1	S 42 30.7	
	16	193 57.7	101 29.9	39.1	20 14.4	29.8	250 47.8	36.2	256 40.1	15.3	Antares	113 14.2	S 26 20.8	
	17	209 00.2	116 29.3	39.1	35 15.5	29.2	265 50.6	36.2	271 42.7	15.4				
	18	224 02.6	131 28.8	N21 39.2	50 16.5	N 3 28.5	280 53.3	S20 36.3	286 45.4	S21 15.4	Arcturus	146 31.6	N 19 23.2	
	19	239 05.1	146 28.2	39.3	65 17.6	27.9	295 56.1	36.4	301 48.0	15.4	Atria	108 51.0	S 68 57.7	
	20	254 07.5	161 27.6	39.4	80 18.6	27.3	310 58.9	36.5	316 50.6	15.5	Avior	234 34.6	S 59 23.1	
	21	269 10.0	176 27.0	.. 39.5	95 19.6	.. 26.6	326 01.7	.. 36.5	331 53.3	.. 15.5	Bellatrix	279 14.3	N 6 18.9	
	22	284 12.5	191 26.4	39.6	110 20.7	26.0	341 04.5	36.6	346 55.9	15.6	Betelgeuse	271 44.0	N 7 24.0	
	23	299 14.9	206 25.8	39.6	125 21.7	25.3	356 07.3	36.7	1 58.6	15.6				
SUNDAY	6 00	314 17.4	221 25.2	N21 39.7	140 22.8	N 3 24.7	11 10.1	S20 36.7	17 01.2	S21 15.6	Canopus	264 14.0	S 52 40.4	
	01	329 19.9	236 24.6	39.8	155 23.8	24.1	26 12.8	36.8	32 03.9	15.7	Capella	281 32.7	N 45 57.4	
	02	344 22.3	251 24.0	39.9	170 24.8	23.4	41 15.6	36.9	47 06.5	15.7	Deneb	49 57.7	N 45 08.7	
	03	359 24.8	266 23.4	.. 39.9	185 25.9	.. 22.8	56 18.4	.. 37.0	62 09.1	.. 15.7	Denebola	183 13.9	N 14 47.4	
	04	14 27.3	281 22.8	40.0	200 26.9	22.1	71 21.2	37.0	77 11.8	15.8	Diphda	349 35.0	S 18 11.7	
	05	29 29.7	296 22.2	40.1	215 28.0	21.5	86 24.0	37.1	92 14.4	15.8				
	06	44 32.2	311 21.7	N21 40.2	230 29.0	N 3 20.8	101 26.8	S20 37.2	107 17.1	S21 15.8	Dubhe	194 40.4	N 61 57.7	
	07	59 34.6	326 21.1	40.2	245 30.0	20.2	116 29.6	37.2	122 19.7	15.9	Elnath	279 02.4	N 28 34.4	
	08	74 37.1	341 20.5	40.3	260 31.1	19.6	131 32.3	37.3	137 22.4	15.9	Eltanin	91 04.0	N 51 29.9	
	09	89 39.6	356 19.9	.. 40.4	275 32.1	.. 18.9	146 35.1	.. 37.4	152 25.0	.. 15.9	Enif	34 25.3	N 9 42.0	
	10	104 42.0	11 19.3	40.4	290 33.1	18.3	161 37.9	37.5	167 27.6	16.0	Fomalhaut	16 06.9	S 29 49.4	
	11	119 44.5	26 18.7	40.5	305 34.2	17.6	176 40.7	37.5	182 30.3	16.0				
	12	134 47.0	41 18.1	N21 40.6	320 35.2	N 3 17.0	191 43.5	S20 37.6	197 32.9	S21 16.0	Gacrux	172 44.9	S 56 54.0	
	13	149 49.4	56 17.5	40.6	335 36.3	16.3	206 46.3	37.7	212 35.6	16.1	Gienah	176 32.9	S 17 19.6	
	14	164 51.9	71 16.9	40.7	350 37.3	15.7	221 49.0	37.7	227 38.2	16.1	Hadar	149 43.7	S 60 11.4	
	15	179 54.4	86 16.3	.. 40.8	5 38.3	.. 15.1	236 51.8	.. 37.8	242 40.9	.. 16.1	Hamal	328 45.0	N 23 16.7	
	16	194 56.8	101 15.7	40.8	20 39.4	14.4	251 54.6	37.9	257 43.5	16.2	Kaus Aust.	84 35.5	S 34 24.2	
	17	209 59.3	116 15.1	40.9	35 40.4	13.8	266 57.4	37.9	272 46.1	16.2				
	18	225 01.8	131 14.5	N21 41.0	50 41.5	N 3 13.1	282 00.2	S20 38.0	287 48.8	S21 16.2	Kochab	137 18.4	N 74 19.2	
	19	240 04.2	146 13.9	41.0	65 42.5	12.5	297 03.0	38.1	302 51.4	16.3	Markab	14 17.1	N 14 59.9	
	20	255 06.7	161 13.3	41.1	80 43.5	11.8	312 05.7	38.2	317 54.1	16.3	Menkar	314 56.1	N 3 56.3	
	21	270 09.1	176 12.7	.. 41.1	95 44.6	.. 11.2	327 08.5	.. 38.2	332 56.7	.. 16.3	Menkent	148 53.9	S 36 10.9	
	22	285 11.6	191 12.1	41.2	110 45.6	10.6	342 11.3	38.3	347 59.4	16.4	Miaplacidus	221 48.9	S 69 33.6	
	23	300 14.1	206 11.5	41.3	125 46.6	09.9	357 14.1	38.4	3 02.0	16.4				
MONDAY	7 00	315 16.5	221 10.9	N21 41.3	140 47.7	N 3 09.3	12 16.9	S20 38.4	18 04.6	S21 16.4	Mirfak	309 36.6	N 49 43.2	
	01	330 19.0	236 10.3	41.4	155 48.7	08.6	27 19.7	38.5	33 07.3	16.5	Nunki	76 46.6	S 26 20.6	
	02	345 21.5	251 09.7	41.4	170 49.8	08.0	42 22.4	38.6	48 09.9	16.5	Peacock	54 20.4	S 56 51.5	
	03	0 23.9	266 09.1	.. 41.5	185 50.8	.. 07.3	57 25.2	.. 38.7	63 12.6	.. 16.5	Pollux	244 16.0	N 28 07.2	
	04	15 26.4	281 08.5	41.5	200 51.8	06.7	72 28.0	38.7	78 15.2	16.6	Procyon	245 41.1	N 5 19.5	
	05	30 28.9	296 07.9	41.6	215 52.9	06.1	87 30.8	38.8	93 17.9	16.6				
	06	45 31.3	311 07.3	N21 41.6	230 53.9	N 3 05.4	102 33.6	S20 38.9	108 20.5	S21 16.6	Rasalhague	96 42.6	N 12 35.5	
	07	60 33.8	326 06.7	41.7	245 54.9	04.8	117 36.4	38.9	123 23.1	16.7	Regulus	208 25.5	N 12 09.4	
	08	75 36.3	341 06.1	41.7	260 56.0	04.1	132 39.1	39.0	138 25.8	16.7	Rigel	281 50.0	S 8 14.7	
	09	90 38.7	356 05.5	.. 41.8	275 57.0	.. 03.5	147 41.9	.. 39.1	153 28.4	.. 16.7	Rigel Kent.	140 45.3	S 60 40.7	
	10	105 41.2	11 04.9	41.8	290 58.1	02.8	162 44.7	39.1	168 31.1	16.8	Sabik	102 57.3	S 15 40.6	
	11	120 43.6	26 04.3	41.9	305 59.1	02.2	177 47.5	39.2	183 33.7	16.8				
	12	135 46.1	41 03.7	N21 41.9	321 00.1	N 3 01.5	192 50.3	S20 39.3	198 36.3	S21 16.8	Schedar	350 24.9	N 56 19.4	
	13	150 48.6	56 03.1	41.9	336 01.2	00.9	207 53.0	39.4	213 39.0	16.9	Shaula	97 14.9	S 37 04.6	
	14	165 51.0	71 02.5	42.0	351 02.2	3 00.3	222 55.8	39.4	228 41.6	16.9	Sirius	259 08.6	S 16 39.7	
	15	180 53.5	86 01.9	.. 42.0	6 03.2	2 59.6	237 58.6	.. 39.5	243 44.3	.. 17.0	Spica	159 12.7	S 10 57.6	
	16	195 56.0	101 01.3	42.1	21 04.3	59.0	253 01.4	39.6	258 46.9	17.0	Suhail	223 21.7	S 43 16.6	
	17	210 58.4	116 00.7	42.1	36 05.3	58.3	268 04.2	39.6	273 49.5	17.0				
	18	226 00.9	131 00.1	N21 42.1	51 06.4	N 2 57.7	283 06.9	S20 39.7	288 52.2	S21 17.1	Vega	81 05.2	N 38 45.1	
	19	241 03.4	145 59.5	42.2	66 07.4	57.0	298 09.7	39.8	303 54.8	17.1	Zuben'ubi	137 48.9	S 15 52.9	
	20	256 05.8	160 58.9	42.2	81 08.4	56.4	313 12.5	39.8	318 57.5	17.1				
	21	271 08.3	175 58.3	.. 42.3	96 09.5	.. 55.7	328 15.3	.. 39.9	334 00.1	.. 17.2				
	22	286 10.7	190 57.7	42.3	111 10.5	55.1	343 18.1	40.0	349 02.7	17.2	Venus	267 07.8	9 15	
	23	301 13.2	205 57.1	42.3	126 11.5	54.5	358 20.8	40.1	4 05.4	17.2	Mars	186 05.4	14 37	
												Jupiter	56 52.7	23 11
												Saturn	62 43.8	22 48

G.M.T.	SUN				MOON				Lat.	Twilight		Sun-rise	Moonrise					
	G.H.A.		Dec.	H.P.	G.H.A.		Dec.	H.P.		Naut.	Civil		5	6	7	8		
	d	h			d	h												
5 00	178	30.5	N17	06.2	253	49.8	11.3	N15	06.1	6.5	56.1	N 72	00 53	21 05	□	□	□	
01	193	30.6		05.5	268	20.1	11.3	15	12.6	6.5	56.1	N 70	01 13	21 58	22 07	22 36	23 38	
02	208	30.7		04.8	282	50.4	11.3	15	19.1	6.4	56.1	68	01 21	22 30	22 53	23 30	24 27	
03	223	30.7	..	04.2	297	20.7	11.3	15	25.5	6.3	56.1	66	02 05	23 03	23 22	24 03	00 03	
04	238	30.8		03.5	311	51.0	11.3	15	31.8	6.2	56.0	64	02 33	23 29	23 45	24 27	00 27	
05	253	30.8		02.8	326	21.3	11.3	15	38.0	6.2	56.0	62	03 39	23 42	24 03	00 03	00 46	
06	268	30.9	N17	02.1	340	51.6	11.3	N15	44.2	6.0	56.0	60	04 51	23 52	24 17	00 17	01 02	
SATURDAY	07	283	31.0	01.5	355	21.9	11.3	15	50.2	6.0	55.9	N 58	01 53	23 53	24 30	00 30	01 15	
	08	298	31.0	00.8	9	52.2	11.3	15	56.2	5.9	55.9	56	02 19	24 03	00 03	00 41	01 26	
	09	313	31.1	17 00.1	24	22.5	11.3	16	02.1	5.8	55.9	54	02 39	24 11	00 11	00 51	01 36	
	10	328	31.1	16 59.4	38	52.8	11.3	16	07.9	5.7	55.9	52	02 55	24 19	00 19	00 59	01 45	
SUNDAY	11	343	31.2	58.8	53	23.1	11.3	16	13.6	5.7	55.8	50	03 09	24 26	00 26	01 07	01 53	
	12	358	31.3	N16	58.1	67	53.4	11.3	N16	19.3	5.5	55.8	45	03 36	04 17	00 03	01 24	02 10
	13	13	31.3	57.4	82	23.7	11.3	16	24.8	5.5	55.8	N 40	03 56	04 33	05 03	00 13	00 54	
	14	28	31.4	56.7	96	54.0	11.3	16	30.3	5.3	55.8	35	04 12	04 45	05 13	00 22	01 04	
	15	43	31.5	56.1	111	24.3	11.3	16	35.6	5.3	55.7	30	04 25	04 56	05 22	00 30	01 13	
	16	58	31.5	55.4	125	54.6	11.3	16	40.9	5.2	55.7	20	04 46	05 14	05 37	00 44	01 29	
	17	73	31.6	54.7	140	24.9	11.2	16	46.1	5.1	55.7	N 10	05 02	05 28	05 50	00 56	01 43	
	18	88	31.6	N16	54.0	154	55.1	11.3	N16	51.2	5.0	55.7	0	05 16	05 41	06 02	01 07	01 57
	19	103	31.7	53.3	169	25.4	11.3	16	56.2	5.0	55.6	S 10	05 27	05 53	06 14	01 19	02 10	
	20	118	31.8	52.7	183	55.7	11.3	17	01.2	4.8	55.6	20	05 38	06 04	06 27	01 31	02 24	
	21	133	31.8	52.0	198	26.0	11.3	17	06.0	4.8	55.6	30	05 48	06 17	06 42	01 45	02 40	
	22	148	31.9	51.3	212	56.3	11.2	17	10.8	4.6	55.6	35	05 53	06 24	06 50	01 53	02 49	
	23	163	32.0	50.6	227	26.5	11.3	17	15.4	4.6	55.5	40	05 59	06 31	07 00	02 02	03 00	
MONDAY	00	178	32.0	N16	49.9	241	56.8	11.3	N17	20.0	4.5	55.5	45	06 04	06 39	07 11	02 13	03 13
	01	193	32.1	49.2	256	27.1	11.2	17	24.5	4.4	55.5	S 50	06 11	06 49	07 24	02 27	03 28	
	02	208	32.2	48.6	270	57.3	11.3	17	28.9	4.3	55.5	52	06 13	06 54	07 30	02 33	03 36	
	03	223	32.2	47.9	285	27.6	11.3	17	33.2	4.2	55.4	54	06 16	06 59	07 37	02 40	03 44	
	04	238	32.3	47.2	299	57.9	11.3	17	37.4	4.2	55.4	56	06 19	07 04	07 45	02 47	03 53	
	05	253	32.4	46.5	314	28.2	11.2	17	41.6	4.0	55.4	58	06 22	07 10	07 53	02 56	04 03	
	06	268	32.4	N16	45.8	328	58.4	11.3	N17	45.6	4.0	55.4	S 60	06 26	07 16	08 03	03 06	04 15
	07	283	32.5	45.1	343	28.7	11.3	17	49.6	3.8	55.3	Lat. Sun-set Twilight Civil Naut. Moonset 5 6 7 8						
	08	298	32.6	44.4	357	59.0	11.3	17	53.4	3.8	55.3	N 72	23 05	18 13	□	□	□	
	09	313	32.6	43.8	12	29.3	11.2	17	57.2	3.7	55.3	N 70	22 04	17 21	18 54	20 07	20 46	
	10	328	32.7	43.1	26	59.5	11.3	18	00.9	3.6	55.3	68	21 30	16 49	18 09	19 13	19 57	
	11	343	32.8	42.4	41	29.8	11.3	18	04.5	3.4	55.2	66	21 05	22 43	16 25	17 39	18 40	
	12	358	32.8	N16	41.7	56	00.1	11.3	N18	07.9	3.5	55.2	64	20 47	22 03	16 07	17 17	18 16
13	13	32.9	41.0	70	30.4	11.3	18	11.4	3.3	55.2	62	20 31	21 35	15 52	17 00	17 57		
14	28	33.0	40.3	85	00.7	11.2	18	14.7	3.2	55.2	60	20 18	21 15	15 39	16 45	17 42		
15	43	33.0	39.6	99	30.9	11.3	18	17.9	3.1	55.2	N 58	20 07	20 58	22 15	15 28	16 32		
16	58	33.1	38.9	114	01.2	11.3	18	21.0	3.0	55.1	56	19 58	20 44	21 50	15 19	16 22		
17	73	33.2	38.2	128	31.5	11.3	18	24.0	3.0	55.1	54	19 49	20 32	21 30	15 11	16 12		
18	88	33.3	N16	37.6	143	01.8	11.3	N18	27.0	2.8	55.1	52	19 42	20 22	21 15	15 03	16 04	
19	103	33.3	36.9	157	32.1	11.3	18	29.8	2.8	55.1	50	19 35	20 12	21 01	14 57	15 56		
20	118	33.4	36.2	172	02.4	11.3	18	32.6	2.7	55.1	45	19 20	19 53	20 35	14 42	15 40		
21	133	33.5	35.5	186	32.7	11.3	18	35.3	2.5	55.0	N 40	19 09	19 38	20 15	14 30	15 27		
22	148	33.5	34.8	201	03.0	11.3	18	37.8	2.5	55.0	35	18 58	19 26	19 59	14 20	15 15		
23	163	33.6	34.1	215	33.3	11.3	18	40.3	2.4	55.0	30	18 50	19 15	19 46	14 12	15 06		
TUESDAY	00	178	33.7	N16	33.4	230	03.6	11.4	N18	42.7	2.3	55.0	20	18 35	18 58	19 25	13 57	14 49
	01	193	33.8	32.7	244	34.0	11.3	18	45.0	2.2	55.0	N 10	18 21	18 43	19 09	13 43	14 34	
	02	208	33.8	32.0	259	04.3	11.3	18	47.2	2.1	54.9	0	18 09	18 31	18 56	13 31	14 20	
	03	223	33.9	31.3	273	34.6	11.4	18	49.3	2.0	54.9	S 10	17 57	18 19	18 44	13 19	14 06	
	04	238	34.0	30.6	288	05.0	11.3	18	51.3	2.0	54.9	20	17 45	18 08	18 34	13 05	13 52	
	05	253	34.0	29.9	302	35.3	11.3	18	53.3	1.8	54.9	30	17 30	17 55	18 24	12 50	13 34	
	06	268	34.1	N16	29.2	317	05.6	11.4	N18	55.1	1.7	54.9	35	17 22	17 48	18 19	12 42	13 25
	07	283	34.2	28.5	331	36.0	11.4	18	56.8	1.7	54.9	40	17 13	17 41	18 13	12 32	13 14	
	08	298	34.3	27.8	346	06.4	11.3	18	58.5	1.5	54.8	45	17 02	17 33	18 08	12 20	13 01	
	09	313	34.3	27.1	0	36.7	11.4	19	00.0	1.5	54.8	S 50	16 48	17 23	18 02	12 06	12 45	
	10	328	34.4	26.4	15	07.1	11.4	19	01.5	1.4	54.8	52	16 42	17 19	17 59	12 00	12 37	
	11	343	34.5	25.7	29	37.5	11.4	19	02.9	1.2	54.8	54	16 35	17 14	17 56	11 52	12 29	
	12	358	34.6	N16	25.0	44	07.9	11.4	N19	04.1	1.2	54.8	56	16 28	17 08	17 53	11 44	12 19
13	13	34.6	24.3	58	38.3	11.4	19	05.3	1.1	54.7	58	16 19	17 03	17 50	11 35	12 09		
14	28	34.7	23.6	73	08.7	11.5	19	06.4	1.0	54.7	S 60	16 09	16 56	17 47	11 25	11 57		
15	43	34.8	22.9	87	39.2	11.4	19	07.4	0.9	54.7	Day Eqn. of Time 00h 12h Mer. Pass. Mer. Upper Pass. Lower Age Phase							
16	58	34.8	22.2	102	09.6	11.5	19	08.3	0.8	54.7	5	05 58	05 55	12 06	07 19	19 44	24	
17	73	34.9	21.5	116	40.1	11.4	19	09.1	0.7	54.7	6	05 52	05 49	12 06	08 08	20 33	25	
18	88	35.0	N16	20.8	131	10.5	11.5	N19	09.8	0.6	54.7	7	05 45	05 42	12 06	08 57	21 22	26
19	103	35.1	20.1	145	41.0	11.5	19	10.4	0.6	54.6								
20	118	35.2	19.4	160	11.5	11.5	19	11.0	0.4	54.6								
21	133	35.2	18.7	174	42.0	11.5	19	11.4	0.4	54.6								
22	148	35.3	18.0	189	12.5	11.5	19	11.8	0.2	54.6								
23	163	35.4	17.3	203	43.0	11.5	19	12.0	0.2	54.6								
	S.D.	15.8	d	0.7	S.D.	15.2	15.0	14.9										

G.M.T.	ARIES			VENUS -3.6			MARS +1.9			JUPITER -2.3			SATURN +0.4			STARS		
	G.H.A.	G.H.A.	Dec.	G.H.A.	G.H.A.	Dec.	G.H.A.	G.H.A.	Dec.	G.H.A.	G.H.A.	Dec.	G.H.A.	G.H.A.	Dec.	Name	S.H.A.	Dec.
8																		
00	316 15.7	220 56.5	N21 42.4	141 12.6	N 2 53.8		13 23.6	S20 40.1		19 08.0	S21 17.3		Acamar	315 48.1	S 40 27.3			
01	331 18.1	235 55.9	42.4	156 13.6	53.2		28 26.4	40.2		34 10.7	17.3		Achernar	335 55.8	S 57 25.7			
02	346 20.6	250 55.3	42.4	171 14.6	52.5		43 29.2	40.3		49 13.3	17.3		Acrux	173 53.5	S 62 53.3			
03	1 23.1	265 54.7	.. 42.5	186 15.7	.. 51.9		58 32.0	.. 40.3		64 15.9	.. 17.4		Adhara	255 43.7	S 28 55.1			
04	16 25.5	280 54.1	42.5	201 16.7	51.2		73 34.7	40.4		79 18.6	17.4		Aldebaran	291 34.5	N 16 25.9			
05	31 28.0	295 53.4	42.5	216 17.7	50.6		88 37.5	40.5		94 21.2	17.4							
06	46 30.5	310 52.8	N21 42.5	231 18.8	N 2 49.9		103 40.3	S20 40.5		109 23.9	S21 17.5		Alioth	166 55.4	N 56 10.4			
07	61 32.9	325 52.2	42.6	246 19.8	49.3		118 43.1	40.6		124 26.5	17.5		Alkaid	153 30.0	N 49 30.7			
08	76 35.4	340 51.6	42.6	261 20.9	48.7		133 45.9	40.7		139 29.1	17.5		Al Na'ir	28 32.5	S 47 08.7			
09	91 37.9	355 51.0	.. 42.6	276 21.9	.. 48.0		148 48.6	.. 40.7		154 31.8	.. 17.6		Alnilam	276 26.4	S 1 13.5			
10	106 40.3	10 50.4	42.6	291 22.9	47.4		163 51.4	40.8		169 34.4	17.6		Alphard	218 34.9	S 8 29.4			
11	121 42.8	25 49.8	42.7	306 24.0	46.7		178 54.2	40.9		184 37.1	17.6							
12	136 45.2	40 49.2	N21 42.7	321 25.0	N 2 46.1		193 57.0	S20 41.0		199 39.7	S21 17.7		Alphecca	126 44.2	N 26 50.9			
13	151 47.7	55 48.6	42.7	336 26.0	45.4		208 59.7	41.0		214 42.3	17.7		Alpheratz	358 23.8	N 28 52.6			
14	166 50.2	70 48.0	42.7	351 27.1	44.8		224 02.5	41.1		229 45.0	17.7		Altair	62 46.2	N 8 46.1			
15	181 52.6	85 47.4	.. 42.7	6 28.1	.. 44.1		239 05.3	.. 41.2		244 47.6	.. 17.8		Ankaa	353 54.1	S 42 30.7			
16	196 55.1	100 46.8	42.7	21 29.1	43.5		254 08.1	41.2		259 50.3	17.8		Antares	113 14.2	S 26 20.8			
17	211 57.6	115 46.1	42.8	36 30.2	42.8		269 10.9	41.3		274 52.9	17.8							
18	227 00.0	130 45.5	N21 42.8	51 31.2	N 2 42.2		284 13.6	S20 41.4		289 55.5	S21 17.9		Arcturus	146 31.6	N 19 23.2			
19	242 02.5	145 44.9	42.8	66 32.2	41.5		299 16.4	41.4		304 58.2	17.9		Atria	108 51.0	S 68 57.7			
20	257 05.0	160 44.3	42.8	81 33.3	40.9		314 19.2	41.5		320 00.8	17.9		Avior	234 34.6	S 59 23.1			
21	272 07.4	175 43.7	.. 42.8	96 34.3	.. 40.2		329 22.0	.. 41.6		335 03.5	.. 18.0		Bellatrix	279 14.3	N 6 18.9			
22	287 09.9	190 43.1	42.8	111 35.3	39.6		344 24.7	41.6		350 06.1	18.0		Betelgeuse	271 44.0	N 7 24.0			
23	302 12.4	205 42.5	42.8	126 36.4	39.0		359 27.5	41.7		5 08.7	18.0							
9																		
00	317 14.8	220 41.9	N21 42.8	141 37.4	N 2 38.3		14 30.3	S20 41.8		20 11.4	S21 18.1		Canopus	264 14.0	S 52 40.3			
01	332 17.3	235 41.3	42.9	156 38.5	37.7		29 33.1	41.8		35 14.0	18.1		Capella	281 32.7	N 45 57.4			
02	347 19.7	250 40.6	42.9	171 39.5	37.0		44 35.9	41.9		50 16.7	18.1		Deneb	49 57.7	N 45 08.7			
03	2 22.2	265 40.0	.. 42.9	186 40.5	.. 36.4		59 38.6	.. 42.0		65 19.3	.. 18.2		Denebola	183 13.9	N 14 47.4			
04	17 24.7	280 39.4	42.9	201 41.6	35.7		74 41.4	42.0		80 21.9	18.2		Diphda	349 35.0	S 18 11.7			
05	32 27.1	295 38.8	42.9	216 42.6	35.1		89 44.2	42.1		95 24.6	18.2							
06	47 29.6	310 38.2	N21 42.9	231 43.6	N 2 34.4		104 47.0	S20 42.2		110 27.2	S21 18.3		Dubhe	194 40.4	N 61 57.7			
07	62 32.1	325 37.6	42.9	246 44.7	33.8		119 49.7	42.3		125 29.8	18.3		Elnath	279 02.4	N 28 34.4			
08	77 34.5	340 37.0	42.9	261 45.7	33.1		134 52.5	42.3		140 32.5	18.3		Eltanin	91 04.0	N 51 29.9			
09	92 37.0	355 36.4	.. 42.9	276 46.7	.. 32.5		149 55.3	.. 42.4		155 35.1	.. 18.3		Enif	34 25.3	N 9 42.0			
10	107 39.5	10 35.7	42.9	291 47.8	31.8		164 58.1	42.5		170 37.8	18.4		Fomalhaut	16 06.9	S 29 49.4			
11	122 41.9	25 35.1	42.9	306 48.8	31.2		180 00.8	42.5		185 40.4	18.4							
12	137 44.4	40 34.5	N21 42.9	321 49.8	N 2 30.5		195 03.6	S20 42.6		200 43.0	S21 18.4		Gacrux	172 44.9	S 56 54.0			
13	152 46.8	55 33.9	42.9	336 50.9	29.9		210 06.4	42.7		215 45.7	18.5		Gienah	176 32.9	S 17 19.6			
14	167 49.3	70 33.3	42.9	351 51.9	29.3		225 09.2	42.7		230 48.3	18.5		Hadar	149 43.7	S 60 11.4			
15	182 51.8	85 32.7	.. 42.9	6 52.9	.. 28.6		240 11.9	.. 42.8		245 50.9	.. 18.5		Hamal	328 45.0	N 23 16.7			
16	197 54.2	100 32.1	42.9	21 54.0	28.0		255 14.7	42.9		260 53.6	18.6		Kaus Aust.	84 35.5	S 34 24.2			
17	212 56.7	115 31.4	42.9	36 55.0	27.3		270 17.5	42.9		275 56.2	18.6							
18	227 59.2	130 30.8	N21 42.9	51 56.0	N 2 26.7		285 20.3	S20 43.0		290 58.8	S21 18.6		Kochab	137 18.4	N 74 19.2			
19	243 01.6	145 30.2	42.8	66 57.1	26.0		300 23.0	43.1		306 01.5	18.7		Markab	14 17.1	N 14 59.9			
20	258 04.1	160 29.6	42.8	81 58.1	25.4		315 25.8	43.1		321 04.1	18.7		Menkar	314 56.1	N 3 56.4			
21	273 06.6	175 29.0	.. 42.8	96 59.1	.. 24.7		330 28.6	.. 43.2		336 06.8	.. 18.7		Menkent	148 53.9	S 36 10.9			
22	288 09.0	190 28.4	42.8	112 00.2	24.1		345 31.4	43.3		351 09.4	18.8		Miaplacidus	221 48.9	S 69 33.6			
23	303 11.5	205 27.8	42.8	127 01.2	23.4		0 34.1	43.3		6 12.0	18.8							
10																		
00	318 14.0	220 27.1	N21 42.8	142 02.2	N 2 22.8		15 36.9	S20 43.4		21 14.7	S21 18.8		Mirfak	309 36.6	N 49 43.3			
01	333 16.4	235 26.5	42.8	157 03.3	22.1		30 39.7	43.5		36 17.3	18.9		Nunki	76 46.6	S 26 20.6			
02	348 18.9	250 25.9	42.8	172 04.3	21.5		45 42.4	43.5		51 19.9	18.9		Peacock	54 20.4	S 56 51.5			
03	3 21.3	265 25.3	.. 42.7	187 05.3	.. 20.8		60 45.2	.. 43.6		66 22.6	.. 18.9		Pollux	244 16.0	N 28 07.2			
04	18 23.8	280 24.7	42.7	202 06.3	20.2		75 48.0	43.7		81 25.2	19.0		Procyon	245 41.1	N 5 19.5			
05	33 26.3	295 24.1	42.7	217 07.4	19.5		90 50.8	43.7		96 27.8	19.0							
06	48 28.7	310 23.4	N21 42.7	232 08.4	N 2 18.9		105 53.5	S20 43.8		111 30.5	S21 19.0		Rasalhague	96 42.6	N 12 35.5			
07	63 31.2	325 22.8	42.7	247 09.4	18.2		120 56.3	43.9		126 33.1	19.1		Regulus	208 25.5	N 12 09.4			
08	78 33.7	340 22.2	42.6	262 10.5	17.6		135 59.1	43.9		141 35.8	19.1		Rigel	281 49.9	S 8 14.7			
09	93 36.1	355 21.6	.. 42.6	277 11.5	.. 16.9		151 01.9	.. 44.0		156 38.4	.. 19.1		Rigel Kent.	140 45.4	S 60 40.7			
10	108 38.6	10 21.0	42.6	292 12.5	16.3		166 04.6	44.1		171 41.0	19.2		Sabik	102 57.4	S 15 40.6			
11	123 41.1	25 20.3	42.6	307 13.6	15.7		181 07.4	44.1		186 43.7	19.2							
12	138 43.5	40 19.7	N21 42.5	322 14.6	N 2 15.0		196 10.2	S20 44.2		201 46.3	S21 19.2		Schedar	350 24.9	N 56 19.4			
13	153 46.0	55 19.1	42.5	337 15.6	14.4		211 12.9	44.3		216 48.9	19.3		Shaula	97 14.9	S 37 04.6			
14	168 48.5	70 18.5	42.5	352 16.7	13.7		226 15.7	44.3		231 51.6	19.3		Sirius	259 08.6	S 16 39.7			
15	183 50.9	85 17.9	.. 42.5	7 17.7	.. 13.1		241 18.5	.. 44.4		246 54.2	.. 19.3		Spica	159 12.7	S 10 57.5			
16	198 53.4	100 17.2	42.4	22 18.7	12.4		256 21.3	44.5		261 56.8	19.4		Suhail	223 21.7	S 43 16.6			
17	213 55.8	115 16.6	42.4	37 19.8	11.8		271 24.0	44.5		276 59.5	19.4							
18	228 58.3	130 16.0	N21 42.4	52 20.8	N 2 11.1		286 26.8	S20 44.6		292 02.1	S21 19.4		Vega	81 05.2	N 38 45.1			
19	244 00.8	145 15.4	42.3	67 21.8	10.5		301 29.6	44.7		307 04.7	19.5		Zuben'ubi	137 48.9	S 15 52.9			
20	259 03.2	160 14.8	42.3	82 22.9	09.8		316 32.3	44.7		322 07.4	19.5							

G.M.T.	SUN				MOON				Lat.	Twilight		Sun-rise	Moonrise							
	G.H.A.		Dec.		G.H.A.		Dec.			Naut.	Civil		8	9	10	11				
	d	h	°	'	°	'	°	'				°					'	h	m	h
TUESDAY	00	178 35.5	N16 16.6	218 13.5	11.6	N19 12.2	0.1	54.6	N 72	///	///	01 32	□	23 55	25 58	01 58				
	01	193 35.5	15.9	232 44.1	11.6	19 12.3	0.1	54.6	N 70	///	///	02 21	23 38	25 03	01 03	02 35				
	02	208 35.6	15.2	247 14.7	11.5	19 12.2	0.1	54.5	68	///	00 18	02 52	24 27	00 27	01 40	03 01				
	03	223 35.7	14.5	261 45.2	11.6	19 12.1	0.2	54.5	66	///	01 44	03 15	00 03	00 58	02 05	03 20				
	04	238 35.8	13.8	276 15.8	11.6	19 11.9	0.3	54.5	64	///	02 19	03 32	00 27	01 21	02 25	03 36				
	05	253 35.8	13.1	290 46.4	11.7	19 11.6	0.4	54.5	62	00 17	02 44	03 47	00 46	01 39	02 41	03 49				
	06	268 35.9	N16 12.4	305 17.1	11.6	N19 11.2	0.4	54.5	60	01 33	03 04	03 59	01 02	01 54	02 55	04 00				
	07	283 36.0	11.7	319 47.7	11.6	19 10.8	0.6	54.5	N 58	02 06	03 20	04 09	01 15	02 07	03 06	04 10				
	08	298 36.1	11.0	334 18.3	11.7	19 10.2	0.7	54.5	56	02 29	03 33	04 18	01 26	02 18	03 16	04 18				
	09	313 36.2	10.3	348 49.0	11.7	19 09.5	0.7	54.4	54	02 47	03 44	04 27	01 36	02 28	03 25	04 26				
	10	328 36.2	09.5	3 19.7	11.7	19 08.8	0.9	54.4	52	03 02	03 54	04 34	01 45	02 37	03 33	04 32				
	11	343 36.3	08.8	17 50.4	11.7	19 07.9	0.9	54.4	50	03 15	04 03	04 40	01 53	02 44	03 40	04 38				
	12	358 36.4	N16 08.1	32 21.1	11.8	N19 07.0	1.0	54.4	45	03 40	04 21	04 54	02 10	03 01	03 55	04 51				
	13	13 36.5	07.4	46 51.9	11.8	19 06.0	1.1	54.4	N 40	04 00	04 36	05 05	02 24	03 15	04 07	05 02				
	14	28 36.6	06.7	61 22.7	11.7	19 04.9	1.2	54.4	35	04 15	04 48	05 15	02 36	03 26	04 18	05 11				
	15	43 36.6	06.0	75 53.4	11.8	19 03.7	1.3	54.4	30	04 28	04 58	05 24	02 46	03 36	04 27	05 19				
	16	58 36.7	05.3	90 24.2	11.9	19 02.4	1.4	54.4	20	04 48	05 15	05 38	03 04	03 53	04 43	05 33				
	17	73 36.8	04.6	104 55.1	11.8	19 01.0	1.5	54.4	N 10	05 03	05 28	05 50	03 20	04 09	04 57	05 45				
	18	88 36.9	N16 03.9	119 25.9	11.9	N18 59.5	1.5	54.3	0	05 16	05 40	06 02	03 34	04 23	05 10	05 56				
	19	103 37.0	03.1	133 56.8	11.8	18 58.0	1.7	54.3	S 10	05 27	05 52	06 13	03 49	04 37	05 23	06 07				
	20	118 37.1	02.4	148 27.6	11.9	18 56.3	1.7	54.3	20	05 36	06 03	06 26	04 05	04 52	05 37	06 19				
	21	133 37.1	01.7	162 58.5	12.0	18 54.6	1.9	54.3	30	05 46	06 14	06 39	04 23	05 09	05 53	06 33				
	22	148 37.2	01.0	177 29.5	11.9	18 52.7	1.9	54.3	35	05 51	06 21	06 47	04 33	05 19	06 02	06 40				
	23	163 37.3	16 00.3	192 00.4	12.0	18 50.8	2.0	54.3	40	05 56	06 28	06 56	04 45	05 31	06 12	06 49				
	24								45	06 01	06 35	07 07	04 59	05 44	06 24	07 00				
WEDNESDAY	00	178 37.4	N15 59.6	206 31.4	12.0	N18 48.8	2.1	54.3	S 50	06 06	06 45	07 19	05 16	06 01	06 39	07 12				
	01	193 37.5	58.9	221 02.4	12.0	18 46.7	2.1	54.3	52	06 09	06 49	07 25	05 24	06 08	06 46	07 18				
	02	208 37.6	58.1	235 33.4	12.0	18 44.6	2.3	54.3	54	06 11	06 53	07 31	05 33	06 17	06 54	07 24				
	03	223 37.6	57.4	250 04.4	12.1	18 42.3	2.3	54.2	56	06 14	06 58	07 39	05 43	06 26	07 02	07 32				
	04	238 37.7	56.7	264 35.5	12.1	18 40.0	2.5	54.2	58	06 17	07 04	07 47	05 55	06 37	07 12	07 40				
	05	253 37.8	56.0	279 06.6	12.1	18 37.5	2.5	54.2	S 60	06 20	07 10	07 56	06 08	06 50	07 23	07 49				
	06	268 37.9	N15 55.3	293 37.7	12.1	N18 35.0	2.6	54.2	Lat.		Sun-set	Twilight		Moonset						
	07	283 38.0	54.5	308 08.8	12.2	18 32.4	2.7	54.2	Civil		Naut.	8		9		10		11		
	08	298 38.1	53.8	322 40.0	12.2	18 29.7	2.8	54.2	Naut.		Civil		8		9		10		11	
	09	313 38.2	53.1	337 11.2	12.2	18 26.9	2.8	54.2	Naut.		Civil		8		9		10		11	
	10	328 38.2	52.4	351 42.4	12.2	18 24.1	3.0	54.2	Naut.		Civil		8		9		10		11	
	11	343 38.3	51.7	6 13.6	12.3	18 21.1	3.0	54.2	N 72	22 30	///	///	□	22 08	21 41	21 28				
	12	358 38.4	N15 51.0	20 44.9	12.3	N18 18.1	3.1	54.2	N 70	21 45	///	///	20 46	20 59	21 03	21 04				
	13	13 38.5	50.2	35 16.2	12.3	18 15.0	3.2	54.2	68	21 15	23 27	///	19 57	20 22	20 37	20 45				
	14	28 38.6	49.5	49 47.5	12.3	18 11.8	3.3	54.1	66	20 54	22 22	///	19 25	19 56	20 16	20 30				
	15	43 38.7	48.8	64 18.8	12.4	18 08.5	3.3	54.1	64	20 36	21 48	///	19 02	19 36	20 00	20 18				
	16	58 38.8	48.1	78 50.2	12.4	18 05.2	3.5	54.1	62	20 22	21 24	23 31	18 44	19 19	19 47	20 07				
	17	73 38.8	47.3	93 21.6	12.4	18 01.7	3.5	54.1	60	20 10	21 05	22 33	18 28	19 06	19 35	19 58				
	18	88 38.9	N15 46.6	107 53.0	12.5	N17 58.2	3.6	54.1	N 58	20 00	20 49	22 02	18 15	18 54	19 25	19 50				
	19	103 39.0	45.9	122 24.5	12.4	17 54.6	3.7	54.1	56	19 51	20 36	21 39	18 04	18 44	19 16	19 43				
	20	118 39.1	45.2	136 55.9	12.5	17 50.9	3.7	54.1	54	19 43	20 25	21 22	17 54	18 35	19 08	19 37				
	21	133 39.2	44.4	151 27.4	12.6	17 47.2	3.9	54.1	52	19 36	20 15	21 07	17 46	18 26	19 01	19 31				
	22	148 39.3	43.7	165 59.0	12.5	17 43.3	3.9	54.1	50	19 30	20 07	20 54	17 38	18 19	18 55	19 26				
	23	163 39.4	43.0	180 30.5	12.6	17 39.4	4.0	54.1	45	19 16	19 49	20 29	17 21	18 04	18 41	19 15				
	THURSDAY	00	178 39.5	N15 42.3	195 02.1	12.7	N17 35.4	4.1	54.1	N 40	19 05	19 34	20 10	17 07	17 51	18 30	19 06			
01		193 39.6	41.5	209 33.8	12.6	17 31.3	4.2	54.1	35	18 55	19 23	19 55	16 56	17 40	18 20	18 58				
02		208 39.6	40.8	224 05.4	12.7	17 27.1	4.2	54.1	30	18 47	19 12	19 43	16 46	17 31	18 12	18 51				
03		223 39.7	40.1	238 37.1	12.7	17 22.9	4.3	54.1	20	18 33	18 56	19 23	16 28	17 14	17 57	18 39				
04		238 39.8	39.4	253 08.8	12.7	17 18.6	4.4	54.0	N 10	18 20	18 42	19 08	16 12	16 59	17 45	18 28				
05		253 39.9	38.6	267 40.5	12.8	17 14.2	4.5	54.0	0	18 09	18 30	18 55	15 58	16 46	17 32	18 18				
06		268 40.0	N15 37.9	282 12.3	12.8	N17 09.7	4.5	54.0	S 10	17 58	18 19	18 45	15 43	16 32	17 20	18 08				
07		283 40.1	37.2	296 44.1	12.8	17 05.2	4.7	54.0	20	17 46	18 08	18 35	15 28	16 17	17 07	17 57				
08		298 40.2	36.4	311 15.9	12.9	17 00.5	4.7	54.0	30	17 32	17 57	18 25	15 10	16 01	16 52	17 44				
09		313 40.3	35.7	325 47.8	12.9	16 55.8	4.7	54.0	35	17 24	17 51	18 21	15 00	15 51	16 44	17 37				
10		328 40.4	35.0	340 19.7	12.9	16 51.1	4.9	54.0	40	17 15	17 44	18 16	14 48	15 40	16 34	17 29				
11		343 40.5	34.3	354 51.6	12.9	16 46.2	4.9	54.0	45	17 05	17 36	18 11	14 34	15 27	16 22	17 19				
12		358 40.6	N15 33.5	9 23.5	13.0	N16 41.3	5.0	54.0	S 50	16 52	17 27	18 05	14 17	15 10	16 08	17 07				
13		13 40.6	32.8	23 55.5	13.0	16 36.3	5.1	54.0	52	16 47	17 23	18 03	14 09	15 03	16 01	17 02				
14		28 40.7	32.1	38 27.5	13.1	16 31.2	5.1	54.0	54	16 40	17 18	18 01	14 00	14 55	15 54	16 56				
15		43 40.8	31.3	52 59.6	13.0	16 26.1	5.2	54.0	56	16 33	17 14	17 58	13 50	14 45	15 45	16 49				
16		58 40.9	30.6	67 31.6	13.1	16 20.9	5.3	54.0	58	16 25	17 08	17 55	13 38	14 34	15 36	16 41				
17																				

G.M.T.		ARIES		VENUS -3.5		MARS +1.9		JUPITER -2.3		SATURN +0.4		STARS			
		G.H.A.	G.H.A.	Dec.	G.H.A.	Dec.	G.H.A.	Dec.	G.H.A.	Dec.	G.H.A.	Dec.	Name	S.H.A.	Dec.
d	h														
FRI DAY	11 00	319 13.1	220 12.3	N21 42.2	142 27.0	N 2 07.2	16 43.4	S20 45.0	22 17.9	S21 19.6			Acamar	315 48.1	S 40 27.3
	01	334 15.6	235 11.6	42.1	157 28.0	06.6	31 46.2	45.1	37 20.5	19.7			Achernar	335 55.7	S 57 25.7
	02	349 18.0	250 11.0	42.1	172 29.0	05.9	46 49.0	45.1	52 23.2	19.7			Acrux	173 53.6	S 62 53.3
	03	4 20.5	265 10.4	42.0	187 30.1	05.3	61 51.7	45.2	67 25.8	19.7			Adhara	255 43.6	S 28 55.0
	04	19 22.9	280 09.8	42.0	202 31.1	04.6	76 54.5	45.3	82 28.4	19.8			Aldebaran	291 34.5	N 16 25.9
	05	34 25.4	295 09.2	41.9	217 32.1	04.0	91 57.3	45.3	97 31.1	19.8					
	06	49 27.9	310 08.5	N21 41.9	232 33.2	N 2 03.3	107 00.0	S20 45.4	112 33.7	S21 19.8			Alioth	166 55.4	N 56 10.4
	07	64 30.3	325 07.9	41.9	247 34.2	02.7	122 02.8	45.5	127 36.3	19.9			Alkaid	153 30.0	N 49 30.7
	08	79 32.8	340 07.3	41.8	262 35.2	02.0	137 05.6	45.5	142 39.0	19.9			Al Na'ir	28 32.5	S 47 08.7
	09	94 35.3	355 06.7	41.8	277 36.3	01.4	152 08.3	45.6	157 41.6	19.9			Alnilam	276 26.4	S 1 13.5
SATURDAY	10	109 37.7	10 06.0	41.7	292 37.3	00.7	167 11.1	45.7	172 44.2	20.0			Alphard	218 34.9	S 8 29.4
	11	124 40.2	25 05.4	41.7	307 38.3	2 00.1	182 13.9	45.7	187 46.9	20.0					
	12	139 42.7	40 04.8	N21 41.6	322 39.4	N 1 59.4	197 16.6	S20 45.8	202 49.5	S21 20.0			Alphecca	126 44.2	N 26 50.9
	13	154 45.1	55 04.2	41.6	337 40.4	58.8	212 19.4	45.9	217 52.1	20.0			Alpheratz	358 23.8	N 28 52.6
	14	169 47.6	70 03.5	41.5	352 41.4	58.1	227 22.2	45.9	232 54.8	20.1			Altair	62 46.2	N 8 46.1
	15	184 50.1	85 02.9	41.5	7 42.4	57.5	242 24.9	46.0	247 57.4	20.1			Ankaa	353 54.1	S 42 30.7
	16	199 52.5	100 02.3	41.4	22 43.5	56.8	257 27.7	46.1	263 00.0	20.1			Antares	113 14.3	S 26 20.8
	17	214 55.0	115 01.7	41.4	37 44.5	56.2	272 30.5	46.1	278 02.7	20.2					
	18	229 57.4	130 01.0	N21 41.3	52 45.5	N 1 55.5	287 33.2	S20 46.2	293 05.3	S21 20.2			Arcturus	146 31.6	N 19 23.2
	19	244 59.9	145 00.4	41.2	67 46.6	54.9	302 36.0	46.3	308 07.9	20.2			Atria	108 51.0	S 68 57.7
	20	260 02.4	159 59.8	41.2	82 47.6	54.2	317 38.8	46.3	323 10.6	20.3			Avior	234 34.6	S 59 23.1
	21	275 04.8	174 59.2	41.1	97 48.6	53.6	332 41.5	46.4	338 13.2	20.3			Bellatrix	279 14.3	N 6 18.9
	22	290 07.3	189 58.5	41.1	112 49.7	52.9	347 44.3	46.5	353 15.8	20.3			Betelgeuse	271 44.0	N 7 24.0
	23	305 09.8	204 57.9	41.0	127 50.7	52.3	2 47.1	46.5	8 18.5	20.4					
	12 00	320 12.2	219 57.3	N21 41.0	142 51.7	N 1 51.6	17 49.8	S20 46.6	23 21.1	S21 20.4			Canopus	264 14.0	S 52 40.3
	01	335 14.7	234 56.7	40.9	157 52.8	51.0	32 52.6	46.7	38 23.7	20.4			Capella	281 32.6	N 45 57.4
	02	350 17.2	249 56.0	40.8	172 53.8	50.3	47 55.4	46.7	53 26.4	20.5			Deneb	49 57.7	N 45 08.7
	03	5 19.6	264 55.4	40.8	187 54.8	49.7	62 58.1	46.8	68 29.0	20.5			Denebola	183 13.9	N 14 47.4
	04	20 22.1	279 54.8	40.7	202 55.8	49.0	78 00.9	46.9	83 31.6	20.5			Diphda	349 35.0	S 18 11.7
	05	35 24.6	294 54.1	40.6	217 56.9	48.4	93 03.7	46.9	98 34.3	20.6					
	06	50 27.0	309 53.5	N21 40.6	232 57.9	N 1 47.7	108 06.4	S20 47.0	113 36.9	S21 20.6			Dubhe	194 40.4	N 61 57.7
	07	65 29.5	324 52.9	40.5	247 58.9	47.1	123 09.2	47.0	128 39.5	20.6			Elnath	279 02.4	N 28 34.4
	08	80 31.9	339 52.3	40.4	263 00.0	46.4	138 12.0	47.1	143 42.2	20.7			Eltanin	91 04.0	N 51 29.9
	09	95 34.4	354 51.6	40.4	278 01.0	45.8	153 14.7	47.2	158 44.8	20.7			Enif	34 25.3	N 9 42.0
	10	110 36.9	9 51.0	40.3	293 02.0	45.1	168 17.5	47.2	173 47.4	20.7			Fomalhaut	16 06.9	S 29 49.4
	11	125 39.3	24 50.4	40.2	308 03.0	44.5	183 20.3	47.3	188 50.1	20.8					
	12	140 41.8	39 49.7	N21 40.1	323 04.1	N 1 43.8	198 23.0	S20 47.4	203 52.7	S21 20.8			Gacrux	172 45.0	S 56 54.0
	13	155 44.3	54 49.1	40.1	338 05.1	43.2	213 25.8	47.4	218 55.3	20.8			Gienah	176 32.9	S 17 19.6
	14	170 46.7	69 48.5	40.0	353 06.1	42.5	228 28.5	47.5	233 58.0	20.8			Hadar	149 43.7	S 60 11.4
	15	185 49.2	84 47.9	39.9	8 07.2	41.9	243 31.3	47.6	249 00.6	20.9			Hamal	328 44.9	N 23 16.8
	16	200 51.7	99 47.2	39.8	23 08.2	41.2	258 34.1	47.6	264 03.2	20.9			Kaus Aust.	84 35.5	S 34 24.2
	17	215 54.1	114 46.6	39.8	38 09.2	40.6	273 36.8	47.7	279 05.8	20.9					
	18	230 56.6	129 46.0	N21 39.7	53 10.2	N 1 39.9	288 39.6	S20 47.8	294 08.5	S21 21.0			Kochab	137 18.5	N 74 19.2
	19	245 59.1	144 45.3	39.6	68 11.3	39.3	303 42.4	47.8	309 11.1	21.0			Markab	14 17.1	N 14 59.9
	20	261 01.5	159 44.7	39.5	83 12.3	38.6	318 45.1	47.9	324 13.7	21.0			Menkar	314 56.1	N 3 56.4
	21	276 04.0	174 44.1	39.4	98 13.3	38.0	333 47.9	47.9	339 16.4	21.1			Menkent	148 53.9	S 36 10.9
	22	291 06.4	189 43.4	39.3	113 14.4	37.3	348 50.6	48.0	354 19.0	21.1			Miaplacidus	221 48.9	S 69 33.5
	23	306 08.9	204 42.8	39.3	128 15.4	36.7	3 53.4	48.1	9 21.6	21.1					
	13 00	321 11.4	219 42.2	N21 39.2	143 16.4	N 1 36.0	18 56.2	S20 48.1	24 24.3	S21 21.2			Mirfak	309 36.6	N 49 43.3
	01	336 13.8	234 41.6	39.1	158 17.4	35.4	33 58.9	48.2	39 26.9	21.2			Nunki	76 46.6	S 26 20.6
02	351 16.3	249 40.9	39.0	173 18.5	34.7	49 01.7	48.3	54 29.5	21.2			Peacock	54 20.4	S 56 51.5	
03	6 18.8	264 40.3	38.9	188 19.5	34.1	64 04.5	48.3	69 32.2	21.3			Pollux	244 16.0	N 28 07.2	
04	21 21.2	279 39.7	38.8	203 20.5	33.4	79 07.2	48.4	84 34.8	21.3			Procyon	245 41.1	N 5 19.5	
05	36 23.7	294 39.0	38.7	218 21.5	32.8	94 10.0	48.5	99 37.4	21.3						
	06	51 26.2	309 38.4	N21 38.6	233 22.6	N 1 32.1	109 12.7	S20 48.5	114 40.0	S21 21.4			Rasalhague	96 42.6	N 12 35.5
	07	66 28.6	324 37.8	38.6	248 23.6	31.4	124 15.5	48.6	129 42.7	21.4			Regulus	208 25.5	N 12 09.4
	08	81 31.1	339 37.1	38.5	263 24.6	30.8	139 18.3	48.6	144 45.3	21.4			Rigel	281 49.9	S 8 14.7
	09	96 33.5	354 36.5	38.4	278 25.7	30.1	154 21.0	48.7	159 47.9	21.4			Rigel Kent.	140 45.4	S 60 40.7
	10	111 36.0	9 35.9	38.3	293 26.7	29.5	169 23.8	48.8	174 50.6	21.5			Sabik	102 57.4	S 15 40.6
	11	126 38.5	24 35.2	38.2	308 27.7	28.8	184 26.5	48.8	189 53.2	21.5					
	12	141 40.9	39 34.6	N21 38.1	323 28.7	N 1 28.2	199 29.3	S20 48.9	204 55.8	S21 21.5			Schedar	350 24.9	N 56 19.4
	13	156 43.4	54 34.0	38.0	338 29.8	27.5	214 32.1	49.0	219 58.4	21.6			Shaula	97 14.9	S 37 04.6
	14	171 45.9	69 33.3	37.9	353 30.8	26.9	229 34.8	49.0	235 01.1	21.6			Sirius	259 08.6	S 16 39.7
	15	186 48.3	84 32.7	37.8	8 31.8	26.2	244 37.6	49.1	250 03.7	21.6			Spica	159 12.7	S 10 57.5
	16	201 50.8	99 32.1	37.7	23 32.8	25.6	259 40.3	49.2	265 06.3	21.7			Suhail	223 21.7	S 43 16.6
	17	216 53.3	114 31.4	37.6	38 33.9	24.9	274 43.1	49.2	280 09.0	21.7					
	18	231 55.7	129 30.8	N21 37.5	53 34.9	N 1 24.3	289 45.9	S20 49.3	295 11.6	S21 21.7			Vega	81 05.2	N 38 45.1
	19	246 58.2	144 30.2	37.4	68 35.9	23.6	304 48.6	49.3	310 14.2	21.8			Zuben'ubi	137 48.9	S 15 52.9
	20	262 00.7	159 29.5	37.3	83 36.9	23.0	319 51.4	49.4	325 16.8	21.8					
	21	277 03.1	174 28.9	37.2	98 38.0	22.3	334 54.1	49.5	340 19.5	21.8					
	22	292 05.6	189 28.3	37.1	113 39.0	21.7	349 56.9	49.5	355 22.1	21.8					

G.M.T.	SUN				MOON				Lat.	Twilight		Sun-rise	Moonrise			
	G.H.A.	Dec.			G.H.A.	φ	Dec.	d		Naut.	Civil		11	12	13	14
d h	° ' "	° ' "	° ' "	° ' "	° ' "	° ' "	° ' "	° ' "	°	h m	h m	h m	h m	h m	h m	h m
11 00	178 41.7	N15 24.7			183 49.3	13.3	N15 36.6	5.9	54.0	N 72	///	02 00	01 58	03 44	05 24	07 02
01	193 41.8	24.0			198 21.6	13.4	15 30.7	5.9	54.0	N 70	///	02 39	02 35	04 07	05 38	07 09
02	208 41.9	23.2			212 54.0	13.4	15 24.8	6.0	54.0	68	///	01 13	03 05	03 01	04 25	05 50
03	223 42.0	22.5			227 26.4	13.5	15 18.8	6.0	54.0	66	///	02 03	03 25	03 20	04 39	05 59
04	238 42.1	21.8			241 58.9	13.5	15 12.8	6.1	54.0	64	///	02 33	03 42	03 36	04 51	06 07
05	253 42.2	21.0			256 31.4	13.5	15 06.7	6.2	54.0	62	01 05	02 55	03 55	03 49	05 01	06 14
06	268 42.3	N15 20.3								60	01 50	03 13	04 06	04 00	05 09	06 20
07	283 42.3	19.5			An Annular Eclipse											
08	298 42.4	18.8			of the Sun occurs on											
F 09	313 42.5	18.1			this date. See page 5.											
R 10	328 42.6	17.3								50	03 21	04 08	04 45	04 38	05 39	06 40
I 11	343 42.7	16.6								45	03 45	04 25	04 58	04 51	05 49	06 48
D 12	358 42.8	N15 15.8			358 19.5	13.7	N14 22.1	6.6	53.9	N 40	04 03	04 39	05 08	05 02	05 58	06 54
13	13 42.9	15.1			12 52.2	13.8	14 15.5	6.7	53.9	35	04 18	04 50	05 17	05 11	06 05	06 59
14	28 43.0	14.4			27 25.0	13.7	14 08.8	6.7	53.9	30	04 30	05 00	05 25	05 19	06 11	07 03
15	43 43.1	13.6			41 57.7	13.8	14 02.1	6.8	53.9	20	04 49	05 16	05 39	05 33	06 22	07 11
16	58 43.2	12.9			56 30.5	13.9	13 55.3	6.9	53.9	N 10	05 03	05 29	05 51	05 45	06 32	07 18
17	73 43.3	12.1			71 03.4	13.8	13 48.4	6.9	53.9	0	05 15	05 40	06 02	05 56	06 41	07 24
18	88 43.4	N15 11.4			85 36.2	13.9	N13 41.5	7.0	53.9	S 10	05 26	05 51	06 12	06 07	06 50	07 31
19	103 43.5	10.6			100 09.1	14.0	13 34.5	7.0	53.9	20	05 35	06 01	06 24	06 19	06 59	07 38
20	118 43.6	09.9			114 42.1	13.9	13 27.5	7.1	53.9	30	05 44	06 12	06 37	06 33	07 10	07 45
21	133 43.7	09.1			129 15.0	14.0	13 20.4	7.2	53.9	35	05 48	06 18	06 44	06 40	07 16	07 50
22	148 43.8	08.4			143 48.0	14.0	13 13.2	7.2	53.9	40	05 52	06 24	06 52	06 49	07 23	07 55
23	163 43.9	07.6			158 21.0	14.0	13 06.0	7.2	53.9	45	05 57	06 31	07 02	07 00	07 31	08 01
12 00	178 44.0	N15 06.9			172 54.0	14.1	N12 58.8	7.4	53.9	S 50	06 02	06 40	07 14	07 12	07 41	08 08
01	193 44.1	06.2			187 27.1	14.1	12 51.4	7.3	53.9	52	06 04	06 44	07 19	07 18	07 46	08 11
02	208 44.2	05.4			202 00.2	14.1	12 44.1	7.5	54.0	54	06 06	06 48	07 25	07 24	07 51	08 14
03	223 44.3	04.7			216 33.3	14.2	12 36.6	7.4	54.0	56	06 08	06 52	07 32	07 32	07 57	08 18
04	238 44.4	03.9			231 06.5	14.1	12 29.2	7.6	54.0	58	06 10	06 57	07 40	07 40	08 03	08 22
05	253 44.5	03.2			245 39.6	14.2	12 21.6	7.6	54.0	S 60	06 13	07 03	07 48	07 49	08 10	08 27
06	268 44.6	N15 02.4			260 12.8	14.3	N12 14.0	7.6	54.0	Lat. Sun-set Twilight Civil Naut. Moonset 11 12 13 14						
07	283 44.7	01.7			274 46.1	14.2	12 06.4	7.7	54.0	°	h m	h m	h m	h m	h m	h m
08	298 44.9	00.9			289 19.3	14.3	11 58.7	7.7	54.0	N 72	22 04	///	///	21 28	21 19	21 11
S 09	313 45.0	15 00.2			303 52.6	14.3	11 51.0	7.8	54.0	N 70	21 27	///	///	21 04	21 03	21 02
T 10	328 45.1	14 59.4			318 25.9	14.3	11 43.2	7.9	54.0	68	21 01	22 48	///	20 45	20 51	20 55
U 11	343 45.2	58.7			332 59.2	14.4	11 35.3	7.8	54.0	66	20 42	22 03	///	20 30	20 40	20 48
D 12	358 45.3	N14 57.9			347 32.6	14.4	N11 27.5	8.0	54.0	64	20 26	21 34	///	20 18	20 31	20 43
13	13 45.4	57.2			2 06.0	14.4	11 19.5	8.0	54.0	62	20 13	21 12	22 57	20 07	20 24	20 38
14	28 45.5	56.4			16 39.4	14.4	11 11.5	8.0	54.0	60	20 02	20 55	22 16	19 58	20 17	20 34
15	43 45.6	55.6			31 12.8	14.5	11 03.5	8.1	54.0	N 58	19 53	20 41	21 49	19 50	20 11	20 30
16	58 45.7	54.9			45 46.3	14.4	10 55.4	8.1	54.0	56	19 44	20 29	21 29	19 43	20 06	20 27
17	73 45.8	54.1			60 19.7	14.5	10 47.3	8.2	54.0	54	19 37	20 18	21 13	19 37	20 02	20 24
18	88 45.9	N14 53.4			74 53.2	14.6	N10 39.1	8.2	54.0	52	19 30	20 09	20 59	19 31	19 58	20 21
19	103 46.0	52.6			89 26.8	14.5	10 30.9	8.3	54.0	50	19 24	20 01	20 47	19 26	19 54	20 19
20	118 46.1	51.9			104 00.3	14.6	10 22.6	8.3	54.0	45	19 12	19 44	20 24	19 15	19 45	20 13
21	133 46.2	51.1			118 33.9	14.6	10 14.3	8.3	54.0	N 40	19 01	19 30	20 06	19 06	19 38	20 09
22	148 46.3	50.4			133 07.5	14.6	10 06.0	8.4	54.0	35	18 52	19 19	19 51	18 58	19 32	20 05
23	163 46.4	49.6			147 41.1	14.6	9 57.6	8.4	54.0	30	18 44	19 09	19 40	18 51	19 27	20 02
13 00	178 46.5	N14 48.8			162 14.7	14.7	N 9 49.2	8.5	54.0	20	18 31	18 54	19 21	18 39	19 18	19 56
01	193 46.6	48.1			176 48.4	14.6	9 40.7	8.5	54.0	N 10	18 19	18 41	19 06	18 28	19 10	19 50
02	208 46.7	47.3			191 22.0	14.7	9 32.2	8.6	54.0	0	18 08	18 30	18 55	18 18	19 02	19 45
03	223 46.8	46.6			205 55.7	14.7	9 23.6	8.6	54.0	S 10	17 58	18 19	18 45	18 08	18 54	19 40
04	238 47.0	45.8			220 29.4	14.8	9 15.0	8.6	54.0	20	17 46	18 09	18 35	17 57	18 46	19 35
05	253 47.1	45.1			235 03.2	14.7	9 06.4	8.7	54.0	30	17 34	17 59	18 27	17 44	18 36	19 28
06	268 47.2	N14 44.3			249 36.9	14.8	N 8 57.7	8.7	54.1	35	17 26	17 53	18 23	17 37	18 31	19 25
07	283 47.3	43.5			264 10.7	14.8	8 49.0	8.7	54.1	40	17 18	17 46	18 18	17 29	18 24	19 21
08	298 47.4	42.8			278 44.5	14.8	8 40.3	8.8	54.1	45	17 09	17 39	18 14	17 19	18 17	19 16
S 09	313 47.5	42.0			293 18.3	14.8	8 31.5	8.9	54.1	S 50	16 57	17 31	18 09	17 07	18 08	19 10
T 10	328 47.6	41.3			307 52.1	14.8	8 22.6	8.8	54.1	52	16 51	17 27	18 07	17 02	18 04	19 08
U 11	343 47.7	40.5			322 25.9	14.9	8 13.8	8.9	54.1	54	16 45	17 23	18 05	16 56	18 00	19 05
D 12	358 47.8	N14 39.7			336 59.8	14.9	N 8 04.9	8.9	54.1	56	16 39	17 19	18 03	16 49	17 55	19 01
13	13 47.9	39.0			351 33.7	14.8	7 56.0	9.0	54.1	S 58	16 31	17 14	18 01	16 41	17 49	18 58
14	28 48.1	38.2			6 07.5	14.9	7 47.0	9.0	54.1	S 60	16 23	17 09	17 58	16 33	17 43	18 54
15	43 48.2	37.4			20 41.4	15.0	7 38.0	9.0	54.1	Day Eqn. of Time 00h 12h Mer. Pass. Mer. Upper Pass. Lower Age Phase						
16	58 48.3	36.7			35 15.4	14.9	7 29.0	9.1	54.1	m s	m s	h m	h m	h m	d	
17	73 48.4	35.9			49 49.3	14.9	7 19.9	9.1	54.1	11	05 13	05 09	12 05	12 07	24 29	00
18	88 48.5	N14 35.2			64 23.2	15.0	N 7 10.8	9.2	54.1	12	05 04	04 59	12 05	12 51	00 29	01
19	103 48.6	34.4			78 57.2	14.9	7 01.7	9.2	54.1	13	04 54	04 49	12 05	13 35	01 13	02
20	118 48.7	33.6			93 31.1	15.0	6 52.5	9.2	54.2							
21	133 48.8	32.9			108 05.1	15.0	6 43.3	9.2	54.2							
22	148 48.9	32.1			122 39.1	15.0	6 34.1	9.2	54.2							
23	163 49.1	31.3			137 13.1	15.0	6 24.9	9.3	54.2							
S.D. 15.8				d 0.8	S.D.	14.7	14.7	14.7								



		ARIES		VENUS -3.5		MARS +1.9		JUPITER -2.3		SATURN +0.4		STARS		
G.M.T.		G.H.A.		G.H.A. Dec.		G.H.A. Dec.		G.H.A. Dec.		G.H.A. Dec.		Name S.H.A. Dec.		
MONDAY	14 00	322 10.5	219 27.0	N 21 36.8	143 41.0	N 1 20.4	20 02.4	S 20 49.7	25 27.4	S 21 21.9	Acamar	315 48.1	S 40 27.3	
	01	337 13.0	234 26.4	36.7	158 42.1	19.7	35 05.2	49.7	40 30.0	21.9	Achernar	335 55.7	S 57 25.7	
	02	352 15.4	249 25.7	36.6	173 43.1	19.1	50 07.9	49.8	55 32.6	22.0	Acrux	173 53.6	S 62 53.3	
	03	7 17.9	264 25.1	.. 36.5	188 44.1	.. 18.4	65 10.7	.. 49.8	70 35.2	.. 22.0	Adhara	255 43.6	S 28 55.0	
	04	22 20.4	279 24.5	36.4	203 45.2	17.8	80 13.4	49.9	85 37.9	22.0	Aldebaran	291 34.5	N 16 25.9	
	05	37 22.8	294 23.8	36.3	218 46.2	17.1	95 16.2	50.0	100 40.5	22.1				
	06	52 25.3	309 23.2	N 21 36.2	233 47.2	N 1 16.4	110 18.9	S 20 50.0	115 43.1	S 21 22.1	Alioth	166 55.5	N 56 10.4	
	07	67 27.8	324 22.6	36.1	248 48.2	15.8	125 21.7	50.1	130 45.7	22.1	Alkaid	153 30.0	N 49 30.0	
	08	82 30.2	339 21.9	35.9	263 49.3	15.1	140 24.5	50.2	145 48.4	22.2	Al Na'ir	28 32.5	S 47 08.1	
	09	97 32.7	354 21.3	.. 35.8	278 50.3	.. 14.5	155 27.2	.. 50.2	160 51.0	.. 22.2	Alnilam	276 26.3	S 1 13.5	
	10	112 35.1	9 20.7	35.7	293 51.3	13.8	170 30.0	50.3	175 53.6	22.2	Alphard	218 34.9	S 8 29.4	
	11	127 37.6	24 20.0	35.6	308 52.3	13.2	185 32.7	50.3	190 56.3	22.3				
	12	142 40.1	39 19.4	N 21 35.5	323 53.4	N 1 12.5	200 35.5	S 20 50.4	205 58.9	S 21 22.3	Alphecca	126 44.2	N 26 50.9	
	13	157 42.5	54 18.8	35.3	338 54.4	11.9	215 38.2	50.5	221 01.5	22.3	Alpheratz	358 23.8	N 28 52.6	
	14	172 45.0	69 18.1	35.2	353 55.4	11.2	230 41.0	50.5	236 04.1	22.3	Altair	62 46.2	N 8 46.1	
	15	187 47.5	84 17.5	.. 35.1	8 56.4	.. 10.6	245 43.7	.. 50.6	251 06.8	.. 22.4	Ankaa	353 54.1	S 42 30.7	
	16	202 49.9	99 16.9	35.0	23 57.5	09.9	260 46.5	50.7	266 09.4	.. 22.4	Antares	113 14.3	S 26 20.8	
	17	217 52.4	114 16.2	34.8	38 58.5	09.3	275 49.2	50.7	281 12.0	22.4				
	18	232 54.9	129 15.6	N 21 34.7	53 59.5	N 1 08.6	290 52.0	S 20 50.8	296 14.6	S 21 22.5	Arcturus	146 31.6	N 19 23.2	
	19	247 57.3	144 14.9	34.6	69 00.5	08.0	305 54.8	50.8	311 17.3	22.5	Atria	108 51.1	S 68 57.7	
	20	262 59.8	159 14.3	34.5	84 01.5	07.3	320 57.5	50.9	326 19.9	22.5	Avior	234 34.6	S 59 23.1	
	21	278 02.3	174 13.7	.. 34.3	99 02.6	.. 06.7	336 00.3	.. 51.0	341 22.5	.. 22.6	Bellatrix	279 14.2	N 6 18.9	
	22	293 04.7	189 13.0	34.2	114 03.6	06.0	351 03.0	51.0	356 25.1	22.6	Betelgeuse	271 43.9	N 7 24.0	
23	308 07.2	204 12.4	34.1	129 04.6	05.3	6 05.8	51.1	11 27.8	22.6					
TUESDAY	15 00	323 09.6	219 11.8	N 21 33.9	144 05.6	N 1 04.7	21 08.5	S 20 51.2	26 30.4	S 21 22.6	Canopus	264 13.9	S 52 40.3	
	01	338 12.1	234 11.1	33.8	159 06.7	04.0	36 11.3	51.2	41 33.0	22.7	Capella	281 32.6	N 45 57.4	
	02	353 14.6	249 10.5	33.7	174 07.7	03.4	51 14.0	51.3	56 35.6	22.7	Deneb	49 57.7	N 45 08.7	
	03	8 17.0	264 09.9	.. 33.5	189 08.7	.. 02.7	66 16.8	.. 51.3	71 38.3	.. 22.7	Denebola	183 13.9	N 14 47.4	
	04	23 19.5	279 09.2	33.4	204 09.7	02.1	81 19.5	51.4	86 40.9	22.8	Diphda	349 35.0	S 18 11.7	
	05	38 22.0	294 08.6	33.2	219 10.8	01.4	96 22.3	51.5	101 43.5	22.8				
	06	53 24.4	309 07.9	N 21 33.1	234 11.8	N 1 00.8	111 25.0	S 20 51.5	116 46.1	S 21 22.8	Dubhe	194 40.4	N 61 57.7	
	07	68 26.9	324 07.3	33.0	249 12.8	1 00.1	126 27.8	51.6	131 48.8	22.9	Elmath	279 02.4	N 28 34.4	
	08	83 29.4	339 06.7	32.8	264 13.8	0 59.5	141 30.5	51.6	146 51.4	22.9	Eltanin	91 04.0	N 51 30.0	
	09	98 31.8	354 06.0	.. 32.7	279 14.9	.. 58.8	156 33.3	.. 51.7	161 54.0	.. 22.9	Enif	34 25.3	N 9 42.0	
	10	113 34.3	9 05.4	32.5	294 15.9	58.2	171 36.0	51.8	176 56.6	23.0	Fomalhaut	16 06.9	S 29 49.4	
	11	128 36.7	24 04.7	32.4	309 16.9	57.5	186 38.8	51.8	191 59.3	23.0				
	12	143 39.2	39 04.1	N 21 32.2	324 17.9	N 0 56.9	201 41.5	S 20 51.9	207 01.9	S 21 23.0	Gacrux	172 45.0	S 56 54.0	
	13	158 41.7	54 03.5	32.1	339 18.9	56.2	216 44.3	51.9	222 04.5	23.0	Gienah	176 32.9	S 17 19.6	
	14	173 44.1	69 02.8	32.0	354 20.0	55.5	231 47.0	52.0	237 07.1	23.1	Hadar	149 43.7	S 60 11.4	
	15	188 46.6	84 02.2	.. 31.8	9 21.0	.. 54.9	246 49.8	.. 52.1	252 09.7	.. 23.1	Hamal	328 44.9	N 23 16.8	
	16	203 49.1	99 01.6	31.7	24 22.0	54.2	261 52.5	52.1	267 12.4	23.1	Kaus Aust.	84 35.5	S 34 24.2	
	17	218 51.5	114 00.9	31.5	39 23.0	53.6	276 55.3	52.2	282 15.0	23.2				
	18	233 54.0	129 00.3	N 21 31.4	54 24.1	N 0 52.9	291 58.0	S 20 52.3	297 17.6	S 21 23.2	Kochab	137 18.5	N 74 19.2	
	19	248 56.5	143 59.6	31.2	69 25.1	52.3	307 00.8	52.3	312 20.2	23.2	Markab	14 17.1	N 14 59.9	
	20	263 58.9	158 59.0	31.0	84 26.1	51.6	322 03.5	52.4	327 22.9	23.3	Menkar	314 56.1	N 3 56.4	
	21	279 01.4	173 58.4	.. 30.9	99 27.1	.. 51.0	337 06.3	.. 52.4	342 25.5	.. 23.3	Menkent	148 54.0	S 36 10.9	
	22	294 03.9	188 57.7	30.7	114 28.1	50.3	352 09.0	52.5	357 28.1	23.3	Miaplacidus	221 48.9	S 69 33.5	
23	309 06.3	203 57.1	30.6	129 29.2	49.7	7 11.8	52.6	12 30.7	23.3					
WEDNESDAY	16 00	324 08.8	218 56.4	N 21 30.4	144 30.2	N 0 49.0	22 14.5	S 20 52.6	27 33.4	S 21 23.4	Mirfak	309 36.5	N 49 43.3	
	01	339 11.2	233 55.8	30.3	159 31.2	48.4	37 17.3	52.7	42 36.0	23.4	Nunki	76 46.6	S 26 20.6	
	02	354 13.7	248 55.2	30.1	174 32.2	47.7	52 20.0	52.7	57 38.6	23.4	Peacock	54 20.4	S 56 51.5	
	03	9 16.2	263 54.5	.. 29.9	189 33.3	.. 47.0	67 22.8	.. 52.8	72 41.2	.. 23.5	Pollux	244 16.0	N 28 07.2	
	04	24 18.6	278 53.9	29.8	204 34.3	46.4	82 25.5	52.9	87 43.9	23.5	Procyon	245 41.0	N 5 19.5	
	05	39 21.1	293 53.2	29.6	219 35.3	45.7	97 28.3	52.9	102 46.5	23.5				
	06	54 23.6	308 52.6	N 21 29.5	234 36.3	N 0 45.1	112 31.0	S 20 53.0	117 49.1	S 21 23.6	Rasalhague	96 42.7	N 12 35.5	
	07	69 26.0	323 52.0	29.3	249 37.3	44.4	127 33.8	53.0	132 51.7	23.6	Regulus	208 25.5	N 12 09.4	
	08	84 28.5	338 51.3	29.1	264 38.4	43.8	142 36.5	53.1	147 54.3	23.6	Rigel	281 49.9	S 8 14.7	
	09	99 31.0	353 50.7	.. 29.0	279 39.4	.. 43.1	157 39.3	.. 53.2	162 57.0	.. 23.6	Rigel Kent.	140 45.4	S 60 40.7	
	10	114 33.4	8 50.0	28.8	294 40.4	42.5	172 42.0	53.2	177 59.6	23.7	Sabik	102 57.4	S 15 40.6	
	11	129 35.9	23 49.4	28.6	309 41.4	41.8	187 44.8	53.3	193 02.2	23.7				
	12	144 38.4	38 48.8	N 21 28.5	324 42.5	N 0 41.2	202 47.5	S 20 53.3	208 04.8	S 21 23.7	Schedar	350 24.8	N 56 19.4	
	13	159 40.8	53 48.1	28.3	339 43.5	40.5	217 50.2	53.4	223 07.4	23.8	Shaula	97 14.9	N 37 04.6	
	14	174 43.3	68 47.5	28.1	354 44.5	39.8	232 53.0	53.5	238 10.1	23.8	Sirius	259 08.6	S 16 39.7	
	15	189 45.7	83 46.8	.. 27.9	9 45.5	.. 39.2	247 55.7	.. 53.5	253 12.7	.. 23.8	Spica	159 12.7	S 10 57.5	
	16	204 48.2	98 46.2	27.8	24 46.5	38.5	262 58.5	53.6	268 15.3	23.9	Suhail	223 21.7	S 43 16.6	
	17	219 50.7	113 45.6	27.6	39 47.6	37.9	278 01.2	53.6	283 17.9	23.9				
	18	234 53.1	128 44.9	N 21 27.4	54 48.6	N 0 37.2	293 04.0	S 20 53.7	298 20.6	S 21 23.9	Vega	81 05.2	N 38 45.1	
	19	249 55.6	143 44.3	27.2	69 49.6	36.6	308 06.7	53.7	313 23.2	23.9	Zuben'ubi	137 48.9	S 15 52.9	
	20	264 58.1	158 43.6	27.1	84 50.6	35.9	323 09.5	53.8	328 25.8	24.0				
	21	280 00.5	173 43.0	.. 26.9	99 51.6	.. 35.3	338 12.2	.. 53.9	343 28.4	.. 24.0				
	22	295 03.0	188 42.4	26.7	114 52.7	34.6	353 14.9	53.9	358 31.0	24.0				
23	310 05.5	203 41.7	26.5	129 53.7	33.9	8 17.7	54.0	13 33.7	24.1					
Mer. Pass.		2 27.0		v -0.6 d 0.1		v 1.0 d 0.7		v 2.8 d 0.1		v 2.6 d 0.0		S.H.A. Mer. Pass.		
												h m		
												9 24		
												14 23		
												22 31		
												22 10		

G.M.T.	SUN				MOON				Lat.	Twilight		Sun-rise	Moonrise						
	G.H.A.		Dec.	H.P.	G.H.A.		Dec.	H.P.		Naut.	Civil		14		15		16		17
	°	'			°	'							°	'	h	m	h	m	
MONDAY	14 00	178 49.2	N14 30.6	151 47.1	15.0	N 6 15.6	9.3	54.2	N 72	////	////	02 22	07 02	08 38	10 15	11 56			
	01	193 49.3	29.8	166 21.1	15.0	6 06.3	9.3	54.2	N 70	////	////	02 55	07 09	08 39	10 10	11 44			
	02	208 49.4	29.0	180 55.1	15.1	5 57.0	9.4	54.2	68	////	01 41	03 18	07 15	08 40	10 07	11 35			
	03	223 49.5	28.3	195 29.2	15.0	5 47.6	9.4	54.2	66	////	02 20	03 36	07 20	08 41	10 03	11 27			
	04	238 49.6	27.5	210 03.2	15.0	5 38.2	9.4	54.2	64	////	02 46	03 51	07 24	08 42	10 01	11 21			
	05	253 49.7	26.7	224 37.2	15.1	5 28.8	9.4	54.2	62	01 30	03 06	04 03	07 28	08 43	09 58	11 15			
	06	268 49.9	N14 26.0	239 11.3	15.0	N 5 19.4	9.5	54.2	60	02 04	03 22	04 13	07 31	08 43	09 56	11 11			
	07	283 50.0	25.2	253 45.3	15.1	5 09.9	9.5	54.3	N 58	02 29	03 35	04 22	07 34	08 44	09 55	11 07			
	08	298 50.1	24.4	268 19.4	15.1	5 00.4	9.5	54.3	56	02 48	03 47	04 30	07 36	08 44	09 53	11 03			
	09	313 50.2	23.7	282 53.5	15.1	4 50.9	9.5	54.3	54	03 03	03 56	04 37	07 39	08 45	09 51	11 00			
	10	328 50.3	22.9	297 27.6	15.0	4 41.4	9.6	54.3	52	03 16	04 05	04 43	07 41	08 45	09 50	10 57			
	11	343 50.4	22.1	312 01.6	15.1	4 31.8	9.5	54.3	50	03 27	04 13	04 49	07 42	08 45	09 49	10 54			
	12	358 50.5	N14 21.3	326 35.7	15.1	N 4 22.3	9.6	54.3	45	03 50	04 29	05 01	07 46	08 46	09 46	10 48			
	13	13 50.7	20.6	341 09.8	15.1	4 12.7	9.6	54.3	N 40	04 07	04 42	05 11	07 50	08 47	09 44	10 43			
	14	28 50.8	19.8	355 43.9	15.1	4 03.1	9.7	54.3	35	04 21	04 53	05 20	07 53	08 47	09 42	10 39			
	15	43 50.9	19.0	10 18.0	15.1	3 53.4	9.6	54.3	30	04 32	05 02	05 27	07 55	08 48	09 41	10 35			
	16	58 51.0	18.3	24 52.1	15.0	3 43.8	9.7	54.4	20	04 50	05 17	05 40	08 00	08 49	09 38	10 29			
	17	73 51.1	17.5	39 26.1	15.1	3 34.1	9.7	54.4	N 10	05 04	05 29	05 51	08 04	08 49	09 36	10 23			
	18	88 51.2	N14 16.7	54 00.2	15.1	N 3 24.4	9.7	54.4	0	05 15	05 40	06 01	08 07	08 50	09 33	10 18			
	19	103 51.4	15.9	68 34.3	15.1	3 14.7	9.7	54.4	S 10	05 25	05 50	06 11	08 11	08 51	09 31	10 12			
	20	118 51.5	15.2	83 08.4	15.1	3 05.0	9.8	54.4	20	05 33	05 59	06 22	08 15	08 52	09 29	10 07			
	21	133 51.6	14.4	97 42.5	15.1	2 55.2	9.7	54.4	30	05 41	06 09	06 34	08 19	08 52	09 26	10 01			
	22	148 51.7	13.6	112 16.6	15.0	2 45.5	9.8	54.4	40	05 49	06 21	06 48	08 24	08 53	09 24	09 57			
23	163 51.8	12.8	126 50.6	15.1	2 35.7	9.8	54.4	45	05 53	06 27	06 58	08 28	08 54	09 21	09 48				
TUESDAY	15 00	178 51.9	N14 12.1	141 24.7	15.1	N 2 25.9	9.8	54.5	S 50	05 57	06 35	07 09	08 32	08 55	09 18	09 43			
	01	193 52.1	11.3	155 58.8	15.0	2 16.1	9.8	54.5	52	05 58	06 38	07 14	08 33	08 55	09 17	09 40			
	02	208 52.2	10.5	170 32.8	15.1	2 06.3	9.8	54.5	54	06 00	06 42	07 19	08 35	08 56	09 16	09 37			
	03	223 52.3	9.7	185 06.9	15.0	1 56.5	9.8	54.5	56	06 02	06 46	07 25	08 38	08 56	09 15	09 34			
	04	238 52.4	8.9	199 40.9	15.1	1 46.7	9.9	54.5	58	06 04	06 50	07 32	08 40	08 57	09 13	09 31			
	05	253 52.5	8.2	214 15.0	15.0	1 36.8	9.9	54.5	S 60	06 06	06 55	07 40	08 43	08 57	09 12	09 27			
	06	268 52.7	N14 07.4	228 49.0	15.0	N 1 26.9	9.8	54.5											
	07	283 52.8	06.6	243 23.0	15.0	1 17.1	9.9	54.6	Lat.	Sun-set	Twilight		Moonset						
	08	298 52.9	05.8	257 57.0	15.0	1 07.2	9.9	54.6			Naut.		14	15	16	17			
	09	313 53.0	5.1	272 31.0	15.0	0 57.3	9.9	54.6	o	h m	h m	h m	h m	h m	h m	h m			
	10	328 53.1	04.3	287 05.0	15.0	0 47.4	9.9	54.6	N 72	21 41	////	////	21 04	20 57	20 49	20 41			
	11	343 53.3	03.5	301 39.0	15.0	0 37.5	9.9	54.6	N 70	21 10	23 40	////	21 00	20 58	20 56	20 55			
	12	358 53.4	N14 02.7	316 13.0	14.9	N 0 27.6	9.9	54.6	68	20 48	22 21	////	20 57	21 00	21 02	21 05			
	13	13 53.5	01.9	330 46.9	15.0	0 17.7	10.0	54.7	66	20 30	21 45	////	20 55	21 01	21 07	21 14			
	14	28 53.6	01.2	345 20.9	14.9	N 0 07.7	9.9	54.7	64	20 16	21 20	23 42	20 52	21 01	21 11	21 22			
	15	43 53.7	14 00.4	359 54.8	14.9	S 0 02.2	9.9	54.7	62	20 04	21 01	22 33	20 50	21 02	21 14	21 28			
	16	58 53.9	13 59.6	14 28.7	14.9	0 12.1	10.0	54.7	60	19 54	20 45	22 00	20 49	21 03	21 18	21 34			
	17	73 54.0	58.8	29 02.6	14.9	0 22.1	9.9	54.7	N 58	19 45	20 32	21 37	20 47	21 03	21 20	21 39			
	18	88 54.1	N13 58.0	43 36.5	14.9	S 0 32.0	10.0	54.7	56	19 37	20 21	21 19	20 46	21 04	21 23	21 43			
	19	103 54.2	57.2	58 10.4	14.8	0 42.0	9.9	54.8	54	19 31	20 11	21 04	20 44	21 04	21 25	21 48			
	20	118 54.4	56.5	72 44.2	14.8	0 51.9	10.0	54.8	52	19 24	20 02	20 51	20 43	21 05	21 27	21 51			
	21	133 54.5	55.7	87 18.0	14.8	1 01.9	9.9	54.8	50	19 19	19 55	20 40	20 42	21 05	21 29	21 55			
	22	148 54.6	54.9	101 51.8	14.8	1 11.8	10.0	54.8	45	19 07	19 39	20 18	20 40	21 06	21 33	22 02			
23	163 54.7	54.1	116 25.6	14.8	1 21.8	10.0	54.8	N 40	18 57	19 26	20 01	20 38	21 07	21 36	22 08				
WEDNESDAY	16 00	178 54.9	N13 53.3	130 59.4	14.7	S 1 31.8	9.9	54.8	35	18 49	19 15	19 48	20 36	21 08	21 39	22 13			
	01	193 55.0	52.5	145 33.1	14.8	1 41.7	10.0	54.9	30	18 41	19 06	19 36	20 35	21 08	21 42	22 18			
	02	208 55.1	51.8	160 06.9	14.7	1 51.7	9.9	54.9	20	18 29	18 52	19 19	20 32	21 09	21 47	22 26			
	03	223 55.2	51.0	174 40.6	14.6	2 01.6	10.0	54.9	N 10	18 18	18 40	19 05	20 30	21 10	21 51	22 33			
	04	238 55.4	50.2	189 14.2	14.7	2 11.6	9.9	54.9	0	18 08	18 29	18 54	20 28	21 11	21 54	22 40			
	05	253 55.5	49.4	203 47.9	14.6	2 21.5	10.0	54.9	S 10	17 58	18 19	18 44	20 26	21 11	21 58	22 46			
	06	268 55.6	N13 48.6	218 21.5	14.6	S 2 31.5	9.9	55.0	20	17 47	18 10	18 36	20 23	21 12	22 02	22 53			
	07	283 55.7	47.8	232 55.1	14.6	2 41.4	9.9	55.0	30	17 36	18 00	18 28	20 21	21 13	22 07	23 02			
	08	298 55.9	47.0	247 28.7	14.5	2 51.3	10.0	55.0	35	17 29	17 55	18 24	20 19	21 14	22 09	23 06			
	09	313 56.0	46.2	262 02.2	14.6	3 01.3	9.9	55.0	40	17 21	17 49	18 21	20 17	21 14	22 12	23 11			
	10	328 56.1	45.4	276 35.8	14.4	3 11.2	9.9	55.0	45	17 12	17 42	18 17	20 15	21 15	22 16	23 18			
	11	343 56.2	44.7	291 09.2	14.5	3 21.1	9.9	55.1	S 50	17 01	17 35	18 13	20 13	21 16	22 20	23 25			
	12	358 56.4	N13 43.9	305 42.7	14.4	S 3 31.0	9.9	55.1	52	16 56	17 32	18 11	20 11	21 16	22 22	23 29			
	13	13 56.5	43.1	320 16.1	14.4	3 40.9	9.9	55.1	54	16 51	17 28	18 10	20 10	21 16	22 24	23 32			
	14	28 56.6	42.3	334 49.5	14.4	3 50.8	9.9	55.1	56	16 44	17 24	18 08	20 09	21 17	22 26	23 37			
	15	43 56.7	41.5	349 22.9	14.3	4 00.7	9.8	5											

		ARIES		VENUS -3.5		MARS +1.9		JUPITER -2.3		SATURN +0.4		STARS				
G.M.T.		G.H.A.	G.H.A.	Dec.	G.H.A.	Dec.	G.H.A.	Dec.	G.H.A.	Dec.	G.H.A.	Dec.	Name	S.H.A.	Dec.	
THURSDAY	17 00	325 07.9	218 41.1	N21 26.3	144 54.7	N 0 33.3	23 20.4	S20 54.0	28 36.3	S21 24.1			Acamar	315 48.0	S 40 27.3	
	01	340 10.4	233 40.4	26.2	159 55.7	32.6	38 23.2	54.1	43 38.9	24.1			Achernar	335 55.7	S 57 25.7	
	02	355 12.8	248 39.8	26.0	174 56.7	32.0	53 25.9	54.2	58 41.5	24.1			Acrux	173 53.6	S 62 53.3	
	03	10 15.3	263 39.1	.. 25.8	189 57.8	.. 31.3	68 28.7	.. 54.2	73 44.1	.. 24.2			Adhara	255 43.6	S 28 55.0	
	04	25 17.8	278 38.5	25.6	204 58.8	30.7	83 31.4	54.3	88 46.8	24.2			Aldebaran	291 34.5	N 16 25.9	
	05	40 20.2	293 37.9	25.4	219 59.8	30.0	98 34.1	54.3	103 49.4	24.2						
	06	55 22.7	308 37.2	N21 25.2	235 00.8	N 0 29.4	113 36.9	S20 54.4	118 52.0	S21 24.3			Alioth	166 55.5	N 56 10.4	
	07	70 25.2	323 36.6	25.0	250 01.8	28.7	128 39.6	54.5	133 54.6	24.3			Alkaid	153 30.0	N 49 30.6	
	08	85 27.6	338 35.9	24.9	265 02.9	28.0	143 42.4	54.5	148 57.2	24.3			Al Na'ir	28 32.5	S 47 08.7	
	09	100 30.1	353 35.3	.. 24.7	280 03.9	.. 27.4	158 45.1	.. 54.6	163 59.8	.. 24.4			Alnilam	276 26.3	S 1 13.5	
	10	115 32.6	8 34.7	24.5	295 04.9	26.7	173 47.9	54.6	179 02.5	24.4			Alphard	218 34.9	S 8 29.4	
	11	130 35.0	23 34.0	24.3	310 05.9	26.1	188 50.6	54.7	194 05.1	24.4						
	12	145 37.5	38 33.4	N21 24.1	325 06.9	N 0 25.4	203 53.3	S20 54.7	209 07.7	S21 24.4			Alphecca	126 44.2	N 26 50.9	
	13	160 40.0	53 32.7	23.9	340 08.0	24.8	218 56.1	54.8	224 10.3	24.5			Alpheratz	358 23.8	N 28 52.7	
	14	175 42.4	68 32.1	23.7	355 09.0	24.1	233 58.8	54.9	239 12.9	24.5			Altair	62 46.2	N 8 46.2	
	15	190 44.9	83 31.4	.. 23.5	10 10.0	.. 23.5	249 01.6	.. 54.9	254 15.6	.. 24.5			Ankaa	353 54.0	S 42 30.7	
	16	205 47.3	98 30.8	23.3	25 11.0	22.8	264 04.3	55.0	269 18.2	24.6			Antares	113 14.3	S 26 20.8	
	17	220 49.8	113 30.2	23.1	40 12.0	22.1	279 07.0	55.0	284 20.8	24.6						
	18	235 52.3	128 29.5	N21 22.9	55 13.0	N 0 21.5	294 09.8	S20 55.1	299 23.4	S21 24.6			Arcturus	146 31.6	N 19 23.2	
	19	250 54.7	143 28.9	22.7	70 14.1	20.8	309 12.5	55.2	314 26.0	24.6			Atria	108 51.1	S 68 57.7	
	20	265 57.2	158 28.2	22.5	85 15.1	20.2	324 15.3	55.2	329 28.7	24.7			Avior	234 34.6	S 59 23.1	
	21	280 59.7	173 27.6	.. 22.3	100 16.1	.. 19.5	339 18.0	.. 55.3	344 31.3	.. 24.7			Bellatrix	279 14.2	N 6 18.9	
	22	296 02.1	188 26.9	22.1	115 17.1	18.9	354 20.7	55.3	359 33.9	24.7			Betelgeuse	271 43.9	N 7 24.0	
	23	311 04.6	203 26.3	21.9	130 18.1	18.2	9 23.5	55.4	14 36.5	24.8						
FRIDAY	18 00	326 07.1	218 25.6	N21 21.7	145 19.2	N 0 17.6	24 26.2	S20 55.4	29 39.1	S21 24.8			Canopus	264 13.9	S 52 40.3	
	01	341 09.5	233 25.0	21.5	160 20.2	16.9	39 28.9	55.5	44 41.7	24.8			Capella	281 32.6	N 45 57.4	
	02	356 12.0	248 24.4	21.3	175 21.2	16.2	54 31.7	55.6	59 44.4	24.8			Deneb	49 57.7	N 45 08.7	
	03	11 14.4	263 23.7	.. 21.1	190 22.2	.. 15.6	69 34.4	.. 55.6	74 47.0	.. 24.9			Denebola	183 13.9	N 14 47.4	
	04	26 16.9	278 23.1	20.9	205 23.2	14.9	84 37.2	55.7	89 49.6	24.9			Diphda	349 35.0	S 18 11.7	
	05	41 19.4	293 22.4	20.6	220 24.2	14.3	99 39.9	55.7	104 52.2	24.9						
	06	56 21.8	308 21.8	N21 20.4	235 25.3	N 0 13.6	114 42.6	S20 55.8	119 54.8	S21 25.0			Dubhe	194 40.4	N 61 57.7	
	07	71 24.3	323 21.1	20.2	250 26.3	13.0	129 45.4	55.8	134 57.4	25.0			Elmath	279 02.4	N 28 34.4	
	08	86 26.8	338 20.5	20.0	265 27.3	12.3	144 48.1	55.9	150 00.1	25.0			Eltanin	91 04.1	N 51 30.0	
	09	101 29.2	353 19.9	.. 19.8	280 28.3	.. 11.6	159 50.8	.. 56.0	165 02.7	.. 25.1			Enif	34 25.3	N 9 42.0	
	10	116 31.7	8 19.2	19.6	295 29.3	11.0	174 53.6	56.0	180 05.3	25.1			Fomalhaut	16 06.9	S 29 49.4	
	11	131 34.2	23 18.6	19.4	310 30.3	10.3	189 56.3	56.1	195 07.9	25.1						
	12	146 36.6	38 17.9	N21 19.1	325 31.4	N 0 09.7	204 59.1	S20 56.1	210 10.5	S21 25.1			Gacrux	172 45.0	S 56 54.0	
	13	161 39.1	53 17.3	18.9	340 32.4	09.0	220 01.8	56.2	225 13.1	25.2			Gienah	176 32.9	S 17 19.6	
	14	176 41.6	68 16.6	18.7	355 33.4	08.4	235 04.5	56.2	240 15.8	25.2			Hadar	149 43.8	S 60 11.4	
	15	191 44.0	83 16.0	.. 18.5	10 34.4	.. 07.7	250 07.3	.. 56.3	255 18.4	.. 25.2			Hamal	328 44.9	N 23 16.8	
	16	206 46.5	98 15.4	18.3	25 35.4	07.1	265 10.0	56.3	270 21.0	25.3			Kaus Aust.	84 35.5	S 34 24.2	
	17	221 48.9	113 14.7	18.0	40 36.4	06.4	280 12.7	56.4	285 23.6	25.3						
	18	236 51.4	128 14.1	N21 17.8	55 37.5	N 0 05.7	295 15.5	S20 56.5	300 26.2	S21 25.3			Kochab	137 18.6	N 74 19.2	
	19	251 53.9	143 13.4	17.6	70 38.5	05.1	310 18.2	56.5	315 28.8	25.3			Markab	14 17.1	N 15 00.0	
	20	266 56.3	158 12.8	17.4	85 39.5	04.4	325 20.9	56.6	330 31.5	25.4			Menkar	314 56.0	N 3 56.4	
	21	281 58.8	173 12.1	.. 17.1	100 40.5	.. 03.8	340 23.7	.. 56.6	345 34.1	.. 25.4			Menkent	148 54.0	S 36 10.9	
	22	297 01.3	188 11.5	16.9	115 41.5	03.1	355 26.4	56.7	0 36.7	25.4			Miaplacidus	221 48.9	S 69 33.5	
	23	312 03.7	203 10.9	16.7	130 42.5	02.5	10 29.1	56.7	15 39.3	25.5						
SATURDAY	19 00	327 06.2	218 10.2	N21 16.5	145 43.6	N 0 01.8	25 31.9	S20 56.8	30 41.9	S21 25.5			Mirfak	309 36.5	N 49 43.3	
	01	342 08.7	233 09.6	16.2	160 44.6	01.1	40 34.6	56.9	45 44.5	25.5			Nunki	76 46.6	S 26 20.6	
	02	357 11.1	248 08.9	16.0	175 45.6	N 0 00.5	55 37.3	56.9	60 47.1	25.5			Peacock	54 20.4	S 56 51.5	
	03	12 13.6	263 08.3	.. 15.8	190 46.6	S 0 00.2	70 40.1	.. 57.0	75 49.8	.. 25.6			Pollux	244 16.0	N 28 07.2	
	04	27 16.1	278 07.6	15.5	205 47.6	00.8	85 42.8	57.0	90 52.4	25.6			Procyon	245 41.0	N 5 19.5	
	05	42 18.5	293 07.0	15.3	220 48.6	01.5	100 45.5	57.1	105 55.0	25.6						
	06	57 21.0	308 06.3	N21 15.1	235 49.7	S 0 02.1	115 48.3	S20 57.1	120 57.6	S21 25.7			Rasalhague	96 42.7	N 12 35.5	
	07	72 23.4	323 05.7	14.8	250 50.7	02.8	130 51.0	57.2	136 00.2	25.7			Regulus	208 25.5	N 12 09.4	
	08	87 25.9	338 05.1	14.6	265 51.7	03.5	145 53.7	57.2	151 02.8	25.7			Rigel	281 49.9	S 8 14.7	
	09	102 28.4	353 04.4	.. 14.3	280 52.7	.. 04.1	160 56.4	.. 57.3	166 05.4	.. 25.7			Rigel Kent.	140 45.5	S 60 40.7	
	10	117 30.8	8 03.8	14.1	295 53.7	04.8	175 59.2	57.4	181 08.1	25.8			Sabik	102 57.4	S 15 40.6	
	11	132 33.3	23 03.1	13.9	310 54.7	05.4	191 01.9	57.4	196 10.7	25.8						
	12	147 35.8	38 02.5	N21 13.6	325 55.7	S 0 06.1	206 04.6	S20 57.5	211 13.3	S21 25.8			Schedar	350 24.8	N 56 19.4	
	13	162 38.2	53 01.8	13.4	340 56.8	06.7	221 07.4	57.5	226 15.9	25.8			Shaula	97 15.0	S 37 04.6	
	14	177 40.7	68 01.2	13.1	355 57.8	07.4	236 10.1	57.6	241 18.5	25.9			Sirius	259 08.5	S 16 39.7	
	15	192 43.2	83 00.5	.. 12.9	10 58.8	.. 08.1	251 12.8	.. 57.6	256 21.1	.. 25.9			Spica	159 12.8	S 10 57.5	
	16	207 45.6	97 59.9	12.6	25 59.8	08.7	266 15.6	57.7	271 23.7	25.9			Suhail	223 21.7	S 43 16.6	
	17	222 48.1	112 59.3	12.4	41 00.8	09.4	281 18.3	57.7	286 26.3	26.0						
	18	237 50.6	127 58.6	N21 12.1	56 01.8	S 0 10.0	296 21.0	S20 57.8	301 29.0	S21 26.0			Vega	81 05.2	N 38 45.2	
	19	252 53.0	142 58.0	11.9	71 02.8	10.7	311 23.7	57.9	316 31.6	26.0			Zuben'ubi	137 48.9	S 15 52.9	
	20	267 55.5	157 57.3	11.6	86 03.9	11.3	326 26.5	57.9	331 34.2	26.0						
	21	282 57.9	172 56.7	.. 11.4	101 04.9	.. 12.0	341 29.2	.. 58.0	346 36.8	.. 26.1						
	22	298 00.4	187 56.0	11.1	116 05.9	12.7	356 31.9	58.0	1 39.4	26.1			Venus	252 18.5	9 27	
	23	313 02.9	202 55.4	10.9	131 06.9	13.3	11 34.6	58.1	16 42.0	26.1			Mars	179 12.1	14 18	
Mer. Pass.		2 15.2	v -0.6	d 0.2	v 1.0	d 0.7	v 2.7	d 0.1	v 2.6	d 0.0	Jupiter				58 19.1	22 18
											Saturn				63 32.0	21 58

Mer. Pass. 2 15.2

v -0.6 d 0.2

v 1.0 d 0.7

v 2.7 d 0.1

v 2.6 d 0.0

v 2.6 d 0.0

v 2.6 d 0.0

v 2.6 d 0.0

G.M.T.		SUN				MOON				Lat.	Twilight		Sun-rise	Moonrise							
		G.H.A.		Dec.	G.H.A.	φ	Dec.	d	H.P.		Naut.	Civil		17	18	19	20				
d	h	°	'	°	'	°	'	°	'	°	'	h	m	h	m	h	m	h	m	h	m
17	00	178	57.9	N13	34.4	120	21.7	14.0	S	5 29.1	9.7	55.3	N 72	///	///	02 42	11 56	13 42	15 39	18 03	
	01	193	58.0		33.6	134	54.7	14.0		5 38.8	9.7	55.4	N 70	///	01 09	03 10	11 44	13 22	15 05	16 53	
	02	208	58.2		32.8	149	27.7	13.9		5 48.5	9.8	55.4	68	///	02 03	03 31	11 35	13 07	14 41	16 16	
	03	223	58.3	..	32.0	164	00.6	13.9		5 58.3	9.7	55.4	66	///	02 35	03 47	11 27	12 54	14 22	15 50	
	04	238	58.4		31.2	178	33.5	13.8		6 08.0	9.6	55.4	64	01 01	02 58	04 00	11 21	12 43	14 07	15 30	
	05	253	58.6		30.4	193	06.3	13.8		6 17.6	9.7	55.5	62	01 49	03 16	04 11	11 15	12 34	13 55	15 14	
	06	268	58.7	N13	29.6	207	39.1	13.8	S	6 27.3	9.6	55.5	60	02 18	03 30	04 21	11 11	12 27	13 44	15 00	
	07	283	58.8		28.8	222	11.9	13.7		6 36.9	9.6	55.5	N 58	02 39	03 43	04 29	11 07	12 20	13 35	14 49	
	08	298	59.0		28.0	236	44.6	13.7		6 46.5	9.6	55.5	56	02 56	03 53	04 36	11 03	12 14	13 27	14 39	
	09	313	59.1	..	27.2	251	17.3	13.6		6 56.1	9.6	55.6	54	03 11	04 03	04 43	11 00	12 09	13 19	14 30	
	10	328	59.2		26.4	265	49.9	13.6		7 05.7	9.5	55.6	52	03 23	04 11	04 48	10 57	12 04	13 13	14 22	
	11	343	59.3		25.6	280	22.5	13.5		7 15.2	9.6	55.6	50	03 33	04 18	04 54	10 54	12 00	13 07	14 15	
	12	358	59.5	N13	24.8	294	55.0	13.5	S	7 24.8	9.5	55.6	45	03 54	04 33	05 05	10 48	11 51	12 55	14 00	
	13	13	59.6		24.0	309	27.5	13.4		7 34.3	9.4	55.7	N 40	04 10	04 45	05 14	10 43	11 43	12 45	13 47	
	14	28	59.7		23.2	323	59.9	13.4		7 43.7	9.5	55.7	35	04 23	04 55	05 22	10 39	11 36	12 36	13 37	
	15	43	59.9	..	22.4	338	32.3	13.4		7 53.2	9.4	55.7	30	04 34	05 04	05 29	10 35	11 31	12 29	13 28	
	16	59	00.0		21.6	353	04.7	13.3		8 02.6	9.4	55.8	20	04 51	05 18	05 41	10 29	11 21	12 15	13 12	
	17	74	00.1		20.8	7	37.0	13.2		8 12.0	9.3	55.8	N 10	05 04	05 29	05 51	10 23	11 12	12 04	12 58	
	18	89	00.3	N13	20.0	22	09.2	13.2	S	8 21.3	9.4	55.8	0	05 15	05 39	06 00	10 18	11 04	11 53	12 45	
	19	104	00.4		19.2	36	41.4	13.1		8 30.7	9.3	55.8	S 10	05 23	05 48	06 10	10 12	10 56	11 42	12 33	
	20	119	00.5		18.4	51	13.5	13.1		8 40.0	9.2	55.9	20	05 31	05 57	06 20	10 07	10 47	11 31	12 19	
	21	134	00.7	..	17.6	65	45.6	13.0		8 49.2	9.3	55.9	30	05 38	06 06	06 31	10 01	10 38	11 18	12 04	
	22	149	00.8		16.8	80	17.6	13.0		8 58.5	9.2	55.9	35	05 42	06 11	06 37	09 57	10 32	11 11	11 55	
23	164	01.0		16.0	94	49.6	12.9		9 07.7	9.2	55.9	40	05 45	06 17	06 44	09 53	10 26	11 03	11 44		
												45	05 48	06 23	06 53	09 48	10 19	10 53	11 33		
18	00	179	01.1	N13	15.2	109	21.5	12.8	S	9 16.9	9.1	56.0	S 50	05 52	06 29	07 03	09 43	10 10	10 41	11 18	
	01	194	01.2		14.4	123	53.3	12.8		9 26.0	9.1	56.0	52	05 53	06 33	07 08	09 40	10 06	10 36	11 11	
	02	209	01.4		13.6	138	25.1	12.7		9 35.1	9.1	56.0	54	05 54	06 36	07 13	09 37	10 02	10 30	11 04	
	03	224	01.5	..	12.8	152	56.8	12.7		9 44.2	9.0	56.1	56	05 56	06 39	07 18	09 34	09 57	10 23	10 56	
	04	239	01.6		12.0	167	28.5	12.6		9 53.2	9.0	56.1	58	05 57	06 43	07 25	09 31	09 51	10 16	10 46	
	05	254	01.8		11.2	182	00.1	12.6		10 02.2	8.9	56.1	S 60	05 59	06 48	07 32	09 27	09 45	10 07	10 36	
	06	269	01.9	N13	10.4	196	31.7	12.5	S	10 11.1	8.9	56.2									
	07	284	02.0		09.6	211	03.2	12.4		10 20.0	8.9	56.2	Lat.	Sun-set	Twilight		Moonset				
	08	299	02.2		08.8	225	34.6	12.4		10 28.9	8.9	56.2			Civil	Naut.	17	18	19	20	
	09	314	02.3	..	07.9	240	06.0	12.3		10 37.8	8.7	56.2									
	10	329	02.5		07.1	254	37.3	12.3		10 46.5	8.8	56.3									
	11	344	02.6		06.3	269	08.6	12.2		10 55.3	8.7	56.3	N 72	21 20	///	///	20 41	20 32	20 18	19 45	
	12	359	02.7	N13	05.5	283	39.8	12.1	S	11 04.0	8.7	56.3	N 70	20 54	22 47	///	20 55	20 53	20 53	20 56	
	13	14	02.9		04.7	298	10.9	12.0		11 12.7	8.6	56.4	68	20 34	21 59	///	21 05	21 10	21 18	21 33	
	14	29	03.0		03.9	312	41.9	12.0		11 21.3	8.5	56.4	66	20 18	21 29	///	21 14	21 24	21 38	22 00	
	15	44	03.1	..	03.1	327	12.9	11.9		11 29.8	8.6	56.4	64	20 05	21 07	22 57	21 22	21 35	21 54	22 20	
	16	59	03.3		02.3	341	43.8	11.9		11 38.4	8.4	56.5	62	19 55	20 49	22 14	21 28	21 45	22 07	22 37	
	17	74	03.4		01.5	356	14.7	11.8		11 46.8	8.5	56.5	60	19 45	20 35	21 46	21 34	21 54	22 18	22 51	
	18	89	03.6	N13	00.7	10	45.5	11.7	S	11 55.3	8.3	56.5	N 58	19 37	20 23	21 25	21 39	22 01	22 28	23 03	
	19	104	03.7		12 59.9	25	16.2	11.7		12 03.6	8.4	56.6	56	19 30	20 13	21 09	21 43	22 07	22 36	23 13	
	20	119	03.8		59.0	39	46.9	11.5		12 12.0	8.2	56.6	54	19 24	20 04	20 55	21 48	22 13	22 44	23 22	
	21	134	04.0	..	58.2	54	17.4	11.5		12 20.2	8.3	56.6	52	19 18	19 56	20 43	21 51	22 18	22 51	23 30	
	22	149	04.1		57.4	68	47.9	11.5		12 28.5	8.1	56.7	50	19 13	19 49	20 33	21 55	22 23	22 57	23 38	
23	164	04.3		56.6	83	18.4	11.4		12 36.6	8.1	56.7	45	19 02	19 34	20 12	22 02	22 34	23 10	23 53		
19	00	179	04.4	N12	55.8	97	48.8	11.3	S	12 44.7	8.1	56.7	N 40	18 53	19 22	19 56	22 08	22 42	23 21	24 06	
	01	194	04.5		55.0	112	19.1	11.2		12 52.8	8.0	56.8	35	18 45	19 12	19 44	22 13	22 50	23 31	24 17	
	02	209	04.7		54.2	126	49.3	11.1		13 00.8	7.9	56.8	30	18 38	19 03	19 33	22 18	22 56	23 39	24 27	
	03	224	04.8	..	53.4	141	19.4	11.1		13 08.7	7.9	56.8	20	18 27	18 50	19 16	22 26	23 08	23 53	24 43	
	04	239	05.0		52.6	155	49.5	11.0		13 16.6	7.8	56.9	N 10	18 17	18 38	19 03	22 33	23 18	24 06	00 06	
	05	254	05.1		51.7	170	19.5	11.0		13 24.4	7.8	56.9	0	18 07	18 29	18 53	22 40	23 27	24 18	00 18	
	06	269	05.3	N12	50.9	184	49.5	10.8	S	13 32.2	7.7	56.9	S 10	17 58	18 19	18 44	22 46	23 37	24 30	00 30	
	07	284	05.4		50.1	199	19.3	10.8		13 39.9	7.7	57.0	20	17 48	18 11	18 37	22 53	23 47	24 42	00 42	
	08	299	05.5		49.3	213	49.1	10.7		13 47.6	7.5	57.0	30	17 37	18 02	18 30	23 02	23 58	24 57	00 57	
	09	314	05.7	..	48.5	228	18.8	10.6		13 55.1	7.6	57.0	35	17 31	17 57	18 26	23 06	24 05	00 05	01 05	

	ARIES	VENUS -3.5	MARS +1.9	JUPITER -2.3	SATURN +0.5	STARS		
G.M.T.	G.H.A.	G.H.A. Dec.	G.H.A. Dec.	G.H.A. Dec.	G.H.A. Dec.	Name	S.H.A.	Dec.
20	00	328 05.3	217 54.7 N21 10.6	146 07.9 S 0 14.0	26 37.4 S20 58.1	31 44.6 S21 26.2	Acamar	315 48.0 S 40 27.3
	01	343 07.8	232 54.1 10.4	161 08.9 14.6	41 40.1 58.2	46 47.2 26.2	Achernar	335 55.6 S 57 25.7
	02	358 10.3	247 53.4 10.1	176 09.9 15.3	56 42.8 58.2	61 49.9 26.2	Acrux	173 53.6 S 62 53.3
	03	13 12.7	262 52.8 .. 09.9	191 11.0 .. 15.9	71 45.6 .. 58.3	76 52.5 .. 26.2	Adhara	255 43.6 S 28 55.0
	04	28 15.2	277 52.2 09.6	206 12.0 16.6	86 48.3 58.4	91 55.1 26.3	Aldebaran	291 34.5 N 16 25.9
SUNDAY	05	43 17.7	292 51.5 09.3	221 13.0 17.3	101 51.0 58.4	106 57.7 26.3		
	06	58 20.1	307 50.9 N21 09.1	236 14.0 S 0 17.9	116 53.7 S20 58.5	122 00.3 S21 26.3	Alioth	166 55.5 N 56 10.4
	07	73 22.6	322 50.2 08.8	251 15.0 18.6	131 56.5 58.5	137 02.9 26.3	Alkaid	153 30.0 N 49 30.6
	08	88 25.0	337 49.6 08.6	266 16.0 19.2	146 59.2 58.6	152 05.5 26.4	Al Na'ir	28 32.5 S 47 08.7
	09	103 27.5	352 48.9 .. 08.3	281 17.0 .. 19.9	162 01.9 .. 58.6	167 08.1 .. 26.4	Alnilam	276 26.3 S 1 13.5
MONDAY	10	118 30.0	7 48.3 08.0	296 18.1 20.5	177 04.6 58.7	182 10.8 26.4	Alphard	218 34.9 S 8 29.4
	11	133 32.4	22 47.6 07.8	311 19.1 21.2	192 07.4 58.7	197 13.4 26.5		
	12	148 34.9	37 47.0 N21 07.5	326 20.1 S 0 21.9	207 10.1 S20 58.8	212 16.0 S21 26.5	Alphecca	126 44.2 N 26 50.9
	13	163 37.4	52 46.4 07.2	341 21.1 22.5	222 12.8 58.8	227 18.6 26.5	Alpheratz	358 23.8 N 28 52.7
	14	178 39.8	67 45.7 07.0	356 22.1 23.2	237 15.5 58.9	242 21.2 26.5	Altair	62 46.2 N 8 46.2
TUESDAY	15	193 42.3	82 45.1 .. 06.7	11 23.1 .. 23.8	252 18.3 .. 59.0	257 23.8 .. 26.6	Ankaa	353 54.0 S 42 30.7
	16	208 44.8	97 44.4 06.4	26 24.1 24.5	267 21.0 59.0	272 26.4 26.6	Antares	113 14.3 S 26 20.8
	17	223 47.2	112 43.8 06.2	41 25.1 25.2	282 23.7 59.1	287 29.0 26.6		
	18	238 49.7	127 43.1 N21 05.9	56 26.2 S 0 25.8	297 26.4 S20 59.1	302 31.6 S21 26.7	Arcturus	146 31.6 N 19 23.2
	19	253 52.2	142 42.5 05.6	71 27.2 26.5	312 29.2 59.2	317 34.2 26.7	Atria	108 51.1 S 68 57.7
WEDNESDAY	20	268 54.6	157 41.8 05.3	86 28.2 27.1	327 31.9 59.2	332 36.9 26.7	Avior	234 34.6 S 59 23.0
	21	283 57.1	172 41.2 .. 05.1	101 29.2 .. 27.8	342 34.6 .. 59.3	347 39.5 .. 26.7	Bellatrix	279 14.2 N 6 18.9
	22	298 59.5	187 40.6 04.8	116 30.2 28.4	357 37.3 59.3	2 42.1 26.8	Betelgeuse	271 43.9 N 7 24.0
	23	314 02.0	202 39.9 04.5	131 31.2 29.1	12 40.0 59.4	17 44.7 26.8		
	24	329 04.5	217 39.3 N21 04.2	146 32.2 S 0 29.8	27 42.8 S20 59.4	32 47.3 S21 26.8	Canopus	264 13.9 S 52 40.3
THURSDAY	01	344 06.9	232 38.6 03.9	161 33.2 30.4	42 45.5 59.5	47 49.9 26.8	Capella	281 32.6 N 45 57.4
	02	359 09.4	247 38.0 03.7	176 34.2 31.1	57 48.2 59.5	62 52.5 26.9	Deneb	49 57.7 N 45 08.7
	03	14 11.9	262 37.3 .. 03.4	191 35.3 .. 31.7	72 50.9 .. 59.6	77 55.1 .. 26.9	Denebola	183 13.9 N 14 47.4
	04	29 14.3	277 36.7 03.1	206 36.3 32.4	87 53.6 59.6	92 57.7 26.9	Diphda	349 34.9 S 18 11.7
	05	44 16.8	292 36.0 02.8	221 37.3 33.0	102 56.4 59.7	108 00.3 27.0		
FRIDAY	06	59 19.3	307 35.4 N21 02.5	236 38.3 S 0 33.7	117 59.1 S20 59.8	123 02.9 S21 27.0	Dubhe	194 40.4 N 61 57.7
	07	74 21.7	322 34.8 02.3	251 39.3 34.4	133 01.8 59.8	138 05.6 27.0	Elnath	279 02.3 N 28 34.4
	08	89 24.2	337 34.1 02.0	266 40.3 35.0	148 04.5 59.9	153 08.2 27.0	Eltanin	91 04.1 N 51 30.0
	09	104 26.7	352 33.5 .. 01.7	281 41.3 .. 35.7	163 07.2 20 59.9	168 10.8 .. 27.1	Enif	34 25.3 N 9 42.0
	10	119 29.1	7 32.8 01.4	296 42.3 36.3	178 10.0 21 00.0	183 13.4 27.1	Fomalhaut	16 06.8 S 29 49.4
SATURDAY	11	134 31.6	22 32.2 01.1	311 43.4 37.0	193 12.7 00.0	198 16.0 27.1		
	12	149 34.0	37 31.5 N21 00.8	326 44.4 S 0 37.7	208 15.4 S21 00.1	213 18.6 S21 27.1	Gacrux	172 45.0 S 56 54.0
	13	164 36.5	52 30.9 00.5	341 45.4 38.3	223 18.1 00.1	228 21.2 27.2	Gienah	176 32.9 S 17 19.6
	14	179 39.0	67 30.2 21 00.2	356 46.4 39.0	238 20.8 00.2	243 23.8 27.2	Hadar	149 43.8 S 60 11.4
	15	194 41.4	82 29.6 20 59.9	11 47.4 .. 39.6	253 23.6 .. 00.2	258 26.4 .. 27.2	Hamal	328 44.9 N 23 16.8
SUNDAY	16	209 43.9	97 29.0 59.6	26 48.4 40.3	268 26.3 00.3	273 29.0 27.3	Kaus Aust.	84 35.5 S 34 24.2
	17	224 46.4	112 28.3 59.3	41 49.4 40.9	283 29.0 00.3	288 31.6 27.3		
	18	239 48.8	127 27.7 N20 59.0	56 50.4 S 0 41.6	298 31.7 S21 00.4	303 34.2 S21 27.3	Kochab	137 18.7 N 74 19.2
	19	254 51.3	142 27.0 58.7	71 51.4 42.3	313 34.4 00.4	318 36.8 27.3	Markab	14 17.1 N 15 00.0
	20	269 53.8	157 26.4 58.5	86 52.4 42.9	328 37.1 00.5	333 39.4 27.4	Menkar	314 56.0 N 3 56.4
MONDAY	21	284 56.2	172 25.7 .. 58.2	101 53.5 .. 43.6	343 39.9 .. 00.5	348 42.1 .. 27.4	Menkent	148 54.0 S 36 10.9
	22	299 58.7	187 25.1 57.9	116 54.5 44.2	358 42.6 00.6	3 44.7 27.4	Miaplacidus	221 48.8 S 69 33.5
	23	315 01.1	202 24.5 57.5	131 55.5 44.9	13 45.3 00.7	18 47.3 27.4		
	24	330 03.6	217 23.8 N20 57.2	146 56.5 S 0 45.6	28 48.0 S21 00.7	33 49.9 S21 27.5	Mirfak	309 36.5 N 49 43.3
	01	345 06.1	232 23.2 56.9	161 57.5 46.2	43 50.7 00.8	48 52.5 27.5	Nunki	76 46.6 S 26 20.6
TUESDAY	02	0 08.5	247 22.5 56.6	176 58.5 46.9	58 53.4 00.8	63 55.1 27.5	Peacock	54 20.4 S 56 51.5
	03	15 11.0	262 21.9 .. 56.3	191 59.5 .. 47.5	73 56.2 .. 00.9	78 57.7 .. 27.5	Pollux	244 15.9 N 28 07.1
	04	30 13.5	277 21.2 56.0	207 00.5 48.2	88 58.9 00.9	94 00.3 27.6	Procyon	245 41.0 N 5 19.5
	05	45 15.9	292 20.6 55.7	222 01.5 48.9	104 01.6 01.0	109 02.9 27.6		
	06	60 18.4	307 19.9 N20 55.4	237 02.5 S 0 49.5	119 04.3 S21 01.0	124 05.5 S21 27.6	Rasalhague	96 42.7 N 12 35.5
WEDNESDAY	07	75 20.9	322 19.3 55.1	252 03.6 50.2	134 07.0 01.1	139 08.1 27.6	Regulus	208 25.5 N 12 09.4
	08	90 23.3	337 18.7 54.8	267 04.6 50.8	149 09.7 01.1	154 10.7 27.7	Rigel	281 49.9 S 8 14.6
	09	105 25.8	352 18.0 .. 54.5	282 05.6 .. 51.5	164 12.4 .. 01.2	169 13.3 .. 27.7	Rigel Kent.	140 45.5 S 60 40.7
	10	120 28.3	7 17.4 54.2	297 06.6 52.1	179 15.2 01.2	184 15.9 27.7	Sabik	102 57.4 S 15 40.6
	11	135 30.7	22 16.7 53.9	312 07.6 52.8	194 17.9 01.3	199 18.5 27.8		
THURSDAY	12	150 33.2	37 16.1 N20 53.5	327 08.6 S 0 53.5	209 20.6 S21 01.3	214 21.1 S21 27.8	Schedar	350 24.8 N 56 19.4
	13	165 35.6	52 15.4 53.2	342 09.6 54.1	224 23.3 01.4	229 23.7 27.8	Shaula	97 15.0 S 37 04.6
	14	180 38.1	67 14.8 52.9	357 10.6 54.8	239 26.0 01.4	244 26.3 27.8	Sirius	259 08.5 S 16 39.7
	15	195 40.6	82 14.1 .. 52.6	12 11.6 .. 55.4	254 28.7 .. 01.5	259 29.0 .. 27.9	Spica	159 12.8 S 10 57.5
	16	210 43.0	97 13.5 52.3	27 12.6 56.1	269 31.4 01.5	274 31.6 27.9	Suhail	223 21.7 S 43 16.5
FRIDAY	17	225 45.5	112 12.9 52.0	42 13.6 56.8	284 34.1 01.6	289 34.2 27.9		
	18	240 48.0	127 12.2 N20 51.6	57 14.6 S 0 57.4	299 36.9 S21 01.6	304 36.8 S21 27.9	Vega	81 05.2 N 38 45.2
	19	255 50.4	142 11.6 51.3	72 15.7 58.1	314 39.6 01.7	319 39.4 28.0	Zuben'ubi	137 48.9 S 15 52.9
	20	270 52.9	157 10.9 51.0	87 16.7 58.7	329 42.3 01.7	334 42.0 28.0		
	21	285 55.4	172 10.3 .. 50.7	102 17.7 0 59.4	344 45.0 .. 01.8	349 44.6 .. 28.0		
SATURDAY	22	300 57.8	187 09.6 50.3	117 18.7 1 00.0	359 47.7 01.8	4 47.2 28.0	Venus	248 34.8 9 30
	23	316 00.3	202 09.0 50.0	132 19.7 00.7	14 50.4 01.9	19 49.8 28.1	Mars	177 27.7 14 13
							Jupiter	58 38.3 22 05
							Saturn	63 42.8 21 45
Mer. Pass.		h m						
		2 03.4	v -0.6 d 0.3	v 1.0 d 0.7	v 2.7 d 0.1	v 2.6 d 0.0		

G.M.T.	SUN				MOON				Lat.	Twilight		Sun-rise	Moonrise				
	G.H.A.		Dec.	H.P.	G.H.A.	p	Dec.	d		Naut.	Civil		20	21	22	23	
	d	h															m
SUNDAY	20 00	179	07-8	N12 36-2	85	35-2	9-4	S15 40-7	6-4	57-6	N 72	03 01	18 03	18 37	19 48	20 08	
	01	194	08-0	35-4	100	03-6	9-4	15 47-1	6-4	57-6	N 70	01 42	03 24	16 53	18 37	19 48	
	02	209	08-1	34-6	114	32-0	9-3	15 53-5	6-2	57-6	68	02 22	03 43	16 16	17 43	18 50	
	03	224	08-3	33-8	129	00-3	9-2	15 59-7	6-2	57-7	66	02 49	03 57	15 50	17 11	18 15	
	04	239	08-4	32-9	143	28-5	9-2	16 05-9	6-2	57-7	64	01 29	03 09	04 09	15 30	16 47	
	05	254	08-6	32-1	157	56-7	9-0	16 12-1	6-0	57-8	62	02 05	03 26	04 19	15 14	16 28	
	06	269	08-7	N12 31-3	172	24-7	9-0	S16 18-1	5-9	57-8	60	02 30	03 39	04 28	15 00	16 12	
	07	284	08-9	30-5	186	52-7	8-9	16 24-0	5-9	57-8	N 58	02 50	03 50	04 35	14 49	15 59	
	08	299	09-0	29-6	201	20-6	8-8	16 29-9	5-8	57-9	56	03 05	04 00	04 42	14 39	15 48	
	09	314	09-2	28-8	215	48-4	8-7	16 35-7	5-6	57-9	54	03 18	04 09	04 48	14 30	15 37	
	10	329	09-3	28-0	230	16-1	8-7	16 41-3	5-6	57-9	52	03 29	04 16	04 53	14 22	15 29	
	11	344	09-5	27-2	244	43-8	8-6	16 46-9	5-5	58-0	50	03 39	04 23	04 58	14 15	15 21	
	12	359	09-6	N12 26-3	259	11-4	8-5	S16 52-4	5-5	58-0	45	03 59	04 37	05 08	14 00	15 04	
	13	14	09-8	25-5	273	38-9	8-4	16 57-9	5-3	58-1	N 40	04 14	04 48	05 17	13 47	14 50	
	14	29	09-9	24-7	288	06-3	8-3	17 03-2	5-2	58-1	35	04 26	04 58	05 24	13 37	14 38	
	15	44	10-1	23-9	302	33-6	8-3	17 08-4	5-1	58-1	30	04 36	05 06	05 31	13 28	14 29	
	16	59	10-2	23-0	317	00-9	8-1	17 13-5	5-1	58-2	20	04 52	05 19	05 41	13 12	14 11	
	17	74	10-4	22-2	331	28-0	8-1	17 18-6	4-9	58-2	N 10	05 04	05 29	05 51	12 58	13 55	
	18	89	10-5	N12 21-4	345	55-1	8-0	S17 23-5	4-9	58-2	0	05 14	05 39	06 00	12 45	13 41	
	19	104	10-7	20-6	0 22-1	8-0	17 28-4	4-7	58-3	S 10	05 22	05 47	06 08	12 33	13 27	14 25	
	20	119	10-8	19-7	14 49-1	7-8	17 33-1	4-7	58-3	20	05 29	05 55	06 18	12 19	13 12	14 09	
	21	134	11-0	18-9	29 15-9	7-8	17 37-8	4-5	58-4	30	05 35	06 03	06 28	12 04	12 54	13 51	
	22	149	11-1	18-1	43 42-7	7-7	17 42-3	4-4	58-4	35	05 38	06 08	06 34	11 55	12 45	13 41	
	23	164	11-3	17-3	58 09-4	7-6	17 46-7	4-4	58-4	40	05 41	06 13	06 40	11 44	12 33	13 29	
24	179	11-4	N12 16-4	72 36-0	7-6	S17 51-1	4-2	58-5	45	05 44	06 18	06 48	11 33	12 20	13 15		
MONDAY	21 00	179	11-4	N12 16-4	72	36-0	7-6	S17 51-1	4-2	58-5	S 50	05 46	06 24	06 57	11 18	12 03	
	01	194	11-6	15-6	87	02-6	7-4	17 55-3	4-2	58-5	52	05 47	06 27	07 02	11 11	11 56	
	02	209	11-7	14-8	101	29-0	7-4	17 59-5	4-0	58-5	54	05 48	06 30	07 06	11 04	11 47	
	03	224	11-9	13-9	115	55-4	7-4	18 03-5	3-9	58-6	56	05 49	06 33	07 11	10 56	11 38	
	04	239	12-0	13-1	130	21-8	7-2	18 07-4	3-8	58-6	58	05 50	06 36	07 17	10 46	11 27	
	05	254	12-2	12-3	144	48-0	7-2	18 11-2	3-7	58-7	S 60	05 51	06 40	07 24	10 36	11 14	
	06	269	12-3	N12 11-5	159	14-2	7-0	S18 14-9	3-6	58-7							
	07	284	12-5	10-6	173	40-2	7-1	18 18-5	3-5	58-7	Lat.	Sun-set	Twilight		Moonset		
	08	299	12-6	09-8	188	06-3	6-9	18 22-0	3-4	58-8			Civil	Naut.	20	21	
	09	314	12-8	09-0	202	32-2	6-9	18 25-4	3-3	58-8					22	23	
	10	329	12-9	08-1	216	58-1	6-8	18 28-7	3-1	58-9							
	11	344	13-1	07-3	231	23-9	6-7	18 31-8	3-0	58-9	N 72	21 01	23 45	19 45	21 09	22 03	
	12	359	13-2	N12 06-5	245	49-6	6-6	S18 34-8	3-0	58-9	N 70	20 38	22 17	19 45	21 09	22 03	
	13	14	13-4	05-6	260	15-2	6-6	18 37-8	2-8	59-0	68	20 21	21 39	21 33	22 03	23 01	
	14	29	13-5	04-8	274	40-8	6-5	18 40-6	2-7	59-0	66	20 07	21 14	23 48	22 00	22 36	
	15	44	13-7	04-0	289	06-3	6-5	18 43-3	2-5	59-0	64	19 55	20 54	22 30	22 20	23 00	
	16	59	13-9	03-1	303	31-8	6-4	18 45-8	2-5	59-1	62	19 45	20 38	21 56	22 37	23 19	
	17	74	14-0	02-3	317	57-2	6-3	18 48-3	2-3	59-1	60	19 37	20 25	21 33	22 51	23 35	
	18	89	14-2	N12 01-5	332	22-5	6-2	S18 50-6	2-2	59-2	N 58	19 29	20 14	21 14	23 03	23 48	
	19	104	14-3	12 00-6	346	47-7	6-2	18 52-8	2-1	59-2	56	19 23	20 05	20 59	23 13	24 00	
	20	119	14-5	11 59-8	1 12-9	6-1	18 54-9	2-0	59-2	54	19 17	19 56	20 46	23 22	24 10	00 10	
	21	134	14-6	11 59-0	15 38-0	6-1	18 56-9	1-9	59-3	52	19 12	19 49	20 35	23 30	24 19	00 19	
	22	149	14-8	58-1	30 03-1	6-0	18 58-8	1-7	59-3	50	19 07	19 42	20 26	23 38	24 27	01 27	
	23	164	14-9	57-3	44 28-1	5-9	19 00-5	1-6	59-3	45	18 57	19 28	20 06	23 53	24 44	01 44	
TUESDAY	22 00	179	15-1	N11 56-5	58	53-0	5-9	S19 02-1	1-5	59-4	N 40	18 49	19 17	19 51	24 06	00 06	
	01	194	15-3	55-6	73	17-9	5-8	19 03-6	1-3	59-4	35	18 42	19 08	19 39	24 17	00 17	
	02	209	15-4	54-8	87	42-7	5-7	19 04-9	1-2	59-5	30	18 35	19 00	19 29	24 27	00 27	
	03	224	15-6	53-9	102	07-4	5-7	19 06-1	1-1	59-5	20	18 24	18 47	19 14	24 43	00 43	
	04	239	15-7	53-1	116	32-1	5-6	19 07-2	1-0	59-5	N 10	18 15	18 37	19 02	00 06	00 58	
	05	254	15-9	52-3	130	56-7	5-6	19 08-2	0-9	59-6	0	18 06	18 28	18 52	00 18	01 12	
	06	269	16-0	N11 51-4	145	21-3	5-6	S19 09-1	0-7	59-6	S 10	17 58	18 19	18 44	00 30	01 25	
	07	284	16-2	50-6	159	45-9	5-4	19 09-8	0-6	59-6	20	17 49	18 11	18 37	00 42	01 40	
	08	299	16-3	49-7	174	10-3	5-4	19 10-4	0-4	59-7	30	17 39	18 03	18 31	00 57	01 57	
	09	314	16-5	48-9	188	34-7	5-4	19 10-8	0-4	59-7	35	17 33	17 59	18 28	01 05	02 06	
	10	329	16-7	48-1	202	59-1	5-3	19 11-2	0-2	59-7	40	17 26	17 54	18 26	01 14	02 17	
	11	344	16-8	47-2	217	23-4	5-3	19 11-4	0-0	59-8	45	17 19	17 49	18 23	01 26	02 30	
	12	359	17-0	N11 46-4	231	47-7	5-2	S19 11-4	0-0	59-8	S 50	17 10	17 43	18 21	01 39	02 46	
	13	14	17-1	45-5	246	11-9	5-2	19 11-4	0-2	59-8	52	17 05	17 40	18 20	01 46	02 54	
	14	29	17-3	44-7	260	36-1	5-1	19 11-2	0-4	59-9	54	17 01	17 38	18 19	01 53	03 02	
	15	44	17-5	43-9	275	00-2	5-1	19 10-8	0-4	59-9	56	16 56	17 34	18 18	02 01	03 11	
	16	59	17-6	43-0	289	24-3	5-1	19 10-4	0-6	59-9	58	16 50	17 31	18 17	02 09	03 22	
	17	74	17-8	42-2	303	48-4	5-0	19 09-8	0-8	60-0	S 60	16 44	17 27	18 16	02 20	03 34	
	18	89	17-9	N11 41-3	318	12-4	5-0	S19 09-0	0-8	60-0							
	19	104	18-1	40-5	332	36-4	4-9	19 08-2	1-0	60-0	Day	SUN		MOON			
	20	119	18-3	39-7	347	00-3	4-9	19 07-2	1-2	60-1		Eqn. of Time 00h	Mer. Pass.	Mer. Upper	Pass. Lower		
	21	134	18-4	38-8	1 24-2	4-9	19 06-0	1-3	60-1	20	m s	m s	h m	h m	h m	d	
	22	149	18-6	38-0	15 48-1	4-8	19 04-7	1-4	60-1	21	03 29	03 22	12 03	18 58	06 31	09	
	23	164	18-7	37-1	30 11-9	4-8	19 03-3	1-5	60-2	22	03 15	03 07	12 03	19 55	07 26	10	
24	179	18-8	36-2	45 00-0	4-7	19 02-0	1-6	60-2	23	03 00	02 52	12 03	20 54	08 24	11		
										SUN		MOON					
										Eqn. of Time 00h		Mer. Pass.		Mer. Upper		Pass. Lower	
										m s		h m		h m		d	

		ARIES		VENUS -3.5		MARS +1.9		JUPITER -2.3		SATURN +0.5		STARS			
G.M.T.		G.H.A.		G.H.A. Dec.		G.H.A. Dec.		G.H.A. Dec.		G.H.A. Dec.		Name		S.H.A. Dec.	
23	00	331 02.8	217 08.3	N 20 49.7	147 20.7	S 1 01.4	29 53.1	S 21 01.9	34 52.4	S 21 28.1	Acamar	315 48.0	S 40 27.3		
	01	346 05.2	232 07.7	49.4	162 21.7	02.0	44 55.8	02.0	49 55.0	28.1	Achernar	335 55.6	S 57 25.7		
	02	1 07.7	247 07.1	49.0	177 22.7	02.7	59 58.5	02.0	64 57.6	28.1	Acrux	173 53.6	S 62 53.3		
	03	16 10.1	262 06.4	.. 48.7	192 23.7	.. 03.3	75 01.2	.. 02.1	80 00.2	.. 28.2	Adhara	255 43.6	S 28 55.0		
	04	31 12.6	277 05.8	48.4	207 24.7	04.0	90 03.9	02.1	95 02.8	28.2	Aldebaran	291 34.4	N 16 25.9		
	05	46 15.1	292 05.1	48.0	222 25.7	04.7	105 06.7	02.2	110 05.4	28.2					
WEDNESDAY	06	61 17.5	307 04.5	N 20 47.7	237 26.7	S 1 05.3	120 09.4	S 21 02.2	125 08.0	S 21 28.3	Alioth	166 55.5	N 56 10.4		
	07	76 20.0	322 03.8	47.4	252 27.7	06.0	135 12.1	02.3	140 10.6	28.3	Alkaid	153 30.0	N 49 30.6		
	08	91 22.5	337 03.2	47.0	267 28.7	06.6	150 14.8	02.3	155 13.2	28.3	Al Na'ir	28 32.5	S 47 08.8		
	09	106 24.9	352 02.6	.. 46.7	282 29.8	.. 07.3	165 17.5	.. 02.4	170 15.8	.. 28.3	Alnilam	276 26.3	S 1 13.5		
	10	121 27.4	7 01.9	46.4	297 30.8	08.0	180 20.2	02.4	185 18.4	28.4	Alphard	218 34.9	S 8 29.4		
	11	136 29.9	22 01.3	46.0	312 31.8	08.6	195 22.9	02.5	200 21.0	28.4					
THURSDAY	12	151 32.3	37 00.6	N 20 45.7	327 32.8	S 1 09.3	210 25.6	S 21 02.5	215 23.6	S 21 28.4	Alphecca	126 44.2	N 26 50.9		
	13	166 34.8	52 00.0	45.4	342 33.8	09.9	225 28.3	02.6	230 26.2	28.4	Alpheratz	358 23.8	N 28 52.7		
	14	181 37.3	66 59.3	45.0	357 34.8	10.6	240 31.0	02.6	245 28.8	28.5	Altair	62 46.2	N 8 46.2		
	15	196 39.7	81 58.7	.. 44.7	12 35.8	.. 11.3	255 33.7	.. 02.7	260 31.4	.. 28.5	Ankaa	353 54.0	S 42 30.7		
	16	211 42.2	96 58.1	44.3	27 36.8	11.9	270 36.4	02.7	275 34.0	28.5	Antares	113 14.3	S 26 20.8		
	17	226 44.6	111 57.4	44.0	42 37.8	12.6	285 39.1	02.8	290 36.6	28.5					
FRIDAY	18	241 47.1	126 56.8	N 20 43.6	57 38.8	S 1 13.2	300 41.8	S 21 02.8	305 39.2	S 21 28.6	Arcturus	146 31.6	N 19 23.2		
	19	256 49.6	141 56.1	43.3	72 39.8	13.9	315 44.6	02.9	320 41.8	28.6	Atria	108 51.2	S 68 57.7		
	20	271 52.0	156 55.5	42.9	87 40.8	14.6	330 47.3	02.9	335 44.4	28.6	Avior	234 34.6	S 59 23.0		
	21	286 54.5	171 54.8	.. 42.6	102 41.8	.. 15.2	345 50.0	.. 03.0	350 47.0	.. 28.6	Bellatrix	279 14.2	N 6 18.9		
	22	301 57.0	186 54.2	42.2	117 42.8	15.9	0 52.7	03.0	5 49.6	28.7	Betelgeuse	271 43.9	N 7 24.0		
	23	316 59.4	201 53.6	41.9	132 43.8	16.5	15 55.4	03.1	20 52.2	28.7					
SATURDAY	00	332 01.9	216 52.9	N 20 41.5	147 44.8	S 1 17.2	30 58.1	S 21 03.1	35 54.8	S 21 28.7	Canopus	264 13.9	S 52 40.3		
	01	347 04.4	231 52.3	41.2	162 45.8	17.9	46 00.8	03.2	50 57.4	28.7	Capella	281 32.5	N 45 57.4		
	02	2 06.8	246 51.6	40.8	177 46.8	18.5	61 03.5	03.2	66 00.0	28.8	Deneb	49 57.7	N 45 08.8		
	03	17 09.3	261 51.0	.. 40.5	192 47.9	.. 19.2	76 06.2	.. 03.3	81 02.6	.. 28.8	Denebola	183 13.9	N 14 47.4		
	04	32 11.7	276 50.4	40.1	207 48.9	19.8	91 08.9	03.3	96 05.2	28.8	Diphda	349 34.9	S 18 11.7		
	05	47 14.2	291 49.7	39.8	222 49.9	20.5	106 11.6	03.4	111 07.8	28.8					
SUNDAY	06	62 16.7	306 49.1	N 20 39.4	237 50.9	S 1 21.2	121 14.3	S 21 03.4	126 10.4	S 21 28.9	Dubhe	194 40.4	N 61 57.7		
	07	77 19.1	321 48.4	39.1	252 51.9	21.8	136 17.0	03.5	141 13.0	28.9	Elmath	279 02.3	N 28 34.4		
	08	92 21.6	336 47.8	38.7	267 52.9	22.5	151 19.7	03.5	156 15.6	28.9	Eltanin	91 04.1	N 51 30.0		
	09	107 24.1	351 47.1	.. 38.3	282 53.9	.. 23.1	166 22.4	.. 03.6	171 18.2	.. 28.9	Enif	34 25.3	N 9 42.2		
	10	122 26.5	6 46.5	38.0	297 54.9	23.8	181 25.1	03.6	186 20.8	29.0	Fomalhaut	16 06.8	S 29 49.4		
	11	137 29.0	21 45.9	37.6	312 55.9	24.5	196 27.8	03.7	201 23.4	29.0					
MONDAY	12	152 31.5	36 45.2	N 20 37.3	327 56.9	S 1 25.1	211 30.5	S 21 03.7	216 26.0	S 21 29.0	Gacrux	172 45.0	S 56 53.9		
	13	167 33.9	51 44.6	36.9	342 57.9	25.8	226 33.2	03.8	231 28.6	29.1	Gienah	176 32.9	S 17 19.6		
	14	182 36.4	66 43.9	36.5	357 58.9	26.4	241 35.9	03.8	246 31.2	29.1	Hadar	149 43.8	S 60 11.4		
	15	197 38.9	81 43.3	.. 36.2	12 59.9	.. 27.1	256 38.6	.. 03.9	261 33.8	.. 29.1	Hamal	328 44.9	N 23 16.8		
	16	212 41.3	96 42.7	35.8	28 00.9	27.7	271 41.3	03.9	276 36.4	29.1	Kaus Aust.	84 35.6	S 34 24.2		
	17	227 43.8	111 42.0	35.4	43 01.9	28.4	286 44.0	03.9	291 39.0	29.2					
TUESDAY	18	242 46.2	126 41.4	N 20 35.1	58 02.9	S 1 29.1	301 46.7	S 21 04.0	306 41.6	S 21 29.2	Kochab	137 18.7	N 74 19.2		
	19	257 48.7	141 40.7	34.7	73 03.9	29.7	316 49.4	04.0	321 44.2	29.2	Markab	14 17.1	N 15 00.0		
	20	272 51.2	156 40.1	34.3	88 04.9	30.4	331 52.1	04.1	336 46.8	29.2	Menkar	314 56.0	N 3 56.4		
	21	287 53.6	171 39.4	.. 34.0	103 05.9	.. 31.0	346 54.8	.. 04.1	351 49.4	.. 29.3	Menkent	148 54.0	S 36 10.9		
	22	302 56.1	186 38.8	33.6	118 06.9	31.7	1 57.5	04.2	6 52.0	29.3	Miaplacidus	221 48.8	S 69 33.5		
	23	317 58.6	201 38.2	33.2	133 07.9	32.4	17 00.2	04.2	21 54.6	29.3					
WEDNESDAY	00	333 01.0	216 37.5	N 20 32.8	148 08.9	S 1 33.0	32 02.9	S 21 04.3	36 57.2	S 21 29.3	Mirfak	309 36.4	N 49 43.3		
	01	348 03.5	231 36.9	32.5	163 09.9	33.7	47 05.6	04.3	51 59.8	29.4	Nunki	76 46.6	S 26 20.6		
	02	3 06.0	246 36.2	32.1	178 10.9	34.3	62 08.3	04.4	67 02.4	29.4	Peacock	54 20.4	S 56 51.6		
	03	18 08.4	261 35.6	.. 31.7	193 11.9	.. 35.0	77 11.0	.. 04.4	82 05.0	.. 29.4	Pollux	244 15.9	N 28 07.1		
	04	33 10.9	276 35.0	31.3	208 12.9	35.7	92 13.7	04.5	97 07.6	29.4	Procyon	245 41.0	N 5 19.5		
	05	48 13.4	291 34.3	30.9	223 13.9	36.3	107 16.4	04.5	112 10.2	29.5					
THURSDAY	06	63 15.8	306 33.7	N 20 30.6	238 14.9	S 1 37.0	122 19.1	S 21 04.6	127 12.8	S 21 29.5	Rasalhague	96 42.7	N 12 35.5		
	07	78 18.3	321 33.0	30.2	253 15.9	37.6	137 21.8	04.6	142 15.4	29.5	Regulus	208 25.5	N 12 09.4		
	08	93 20.7	336 32.4	29.8	268 16.9	38.3	152 24.5	04.7	157 18.0	29.5	Rigel	281 49.8	S 8 14.6		
	09	108 23.2	351 31.8	.. 29.4	283 17.9	.. 39.0	167 27.1	.. 04.7	172 20.6	.. 29.6	Rigel Kent.	140 45.5	S 60 40.7		
	10	123 25.7	6 31.1	29.0	298 18.9	39.6	182 29.8	04.8	187 23.1	29.6	Sabik	102 57.4	S 15 40.6		
	11	138 28.1	21 30.5	28.7	313 19.9	40.3	197 32.5	04.8	202 25.7	29.6					
FRIDAY	12	153 30.6	36 29.8	N 20 28.3	328 20.9	S 1 40.9	212 35.2	S 21 04.9	217 28.3	S 21 29.6	Schedar	350 24.8	N 56 19.4		
	13	168 33.1	51 29.2	27.9	343 21.9	41.6	227 37.9	04.9	232 30.9	29.7	Shaula	97 15.0	S 37 04.6		
	14	183 35.5	66 28.6	27.5	358 22.9	42.3	242 40.6	04.9	247 33.5	29.7	Sirius	259 08.5	S 16 39.7		
	15	198 38.0	81 27.9	.. 27.1	13 24.0	.. 42.9	257 43.3	.. 05.0	262 36.1	.. 29.7	Spica	159 12.8	N 10 57.5		
	16	213 40.5	96 27.3	26.7	28 25.0	43.6	272 46.0	05.0	277 38.7	29.7	Suhail	223 21.7	S 43 16.5		
	17	228 42.9	111 26.6	26.3	43 26.0	44.2	287 48.7	05.1	292 41.3	29.8					
SATURDAY	18	243 45.4	126 26.0	N 20 25.9	58 27.0	S 1 44.9	302 51.4	S 21 05.1	307 43.9	S 21 29.8	Vega	81 05.2	N 38 45.2		
	19	258 47.8	141 25.4	25.5	73 28.0	45.6	317 54.1	05.2	322 46.5	29.8	Zuben'ubi	137 48.9	S 15 52.9		
	20	273 50.3	156 24.7	25.1	88 29.0	46.2	332 56.8	05.2	337 49.1	29.8					
	21	288 52.8	171 24.1	.. 24.7	103 30.0	.. 46.9	347 59.5	.. 05.3	352 51.7	.. 29.9					
	22	303 55.2	186 23.4	24.3	118 31.0	47.5	3 02.2	05.3	7 54.3	29.9					
	23	318 57.7	201 22.8	23.9	133 32.0	48.2	18 04.9	05.4	22 56.9	29.9					
Mer. Pass.		h m 1 51.6		v -0.6 d 0.4		v 1.0 d 0.7		v 2.7 d 0.0		v 2.6 d 0.0		Name		S.H.A. Mer. Pass. h m	
												Venus		244 51.0 9 33	
												Mars		175 42.9 14 08	
												Jupiter		58 56.2 21 52	
												Saturn		63 52.9 21 33	

G.M.T.	SUN		MOON				Lat.	Twilight		Sun-rise	Moonrise					
	G.H.A.	Dec.	G.H.A.	φ	Dec.	d		H.P.	Naut.		Civil	23	24	25	26	
d h	o	'	o	'	o	'	'	o	h m	h m	h m	h m	h m	h m	h m	h m
23	00	179 18.9	N 11 36.3	44 35.7	4.7	S 19 01.8	1.7	60.2	N 72	///	01 10	03 18	■	20 52	20 36	20 25
	01	194 19.1		58 59.4	4.8	19 00.1	1.8	60.2	N 70	///	02 07	03 39	20 08	20 14	20 14	20 13
	02	209 19.2		73 23.2	4.7	18 58.3	1.9	60.3	68	///	02 39	03 55	19 27	19 47	19 58	20 04
	03	224 19.4	.. 33.7	87 46.9	4.7	18 56.4	2.1	60.3	66	01 01	03 03	04 08	18 59	19 27	19 44	19 56
	04	239 19.5		102 10.6	4.6	18 54.3	2.3	60.3	64	01 50	03 20	04 18	18 38	19 10	19 32	19 49
WEDNESDAY	05	254 19.7		116 34.2	4.7	18 52.0	2.3	60.4	62	02 20	03 35	04 27	18 20	18 57	19 23	19 43
	06	269 19.9	N 11 31.2	130 57.9	4.6	S 18 49.7	2.5	60.4	60	02 42	03 47	04 35	18 06	18 45	19 14	19 38
	07	284 20.0		145 21.5	4.6	18 47.2	2.7	60.4	N 58	02 59	03 58	04 42	17 53	18 35	19 07	19 34
	08	299 20.2		159 45.1	4.5	18 44.5	2.7	60.5	56	03 13	04 07	04 48	17 43	18 26	19 01	19 29
	09	314 20.4	.. 28.7	174 08.6	4.6	18 41.8	2.9	60.5	54	03 25	04 15	04 53	17 33	18 18	18 55	19 26
THURSDAY	10	329 20.5		188 32.2	4.5	18 38.9	3.1	60.5	52	03 36	04 22	04 58	17 25	18 11	18 50	19 23
	11	344 20.7		202 55.7	4.5	18 35.8	3.2	60.5	50	03 45	04 28	05 03	17 17	18 04	18 45	19 20
	12	359 20.8	N 11 26.1	217 19.2	4.5	S 18 32.6	3.3	60.6	45	04 03	04 41	05 12	17 01	17 51	18 34	19 13
	13	14 21.0		231 42.7	4.5	18 29.3	3.4	60.6	N 40	04 17	04 51	05 20	16 48	17 39	18 26	19 08
	14	29 21.2		246 06.2	4.5	18 25.9	3.6	60.6	35	04 29	05 00	05 26	16 36	17 30	18 18	19 03
FRIDAY	15	44 21.3	.. 23.6	260 29.7	4.5	18 22.3	3.7	60.6	30	04 38	05 08	05 32	16 27	17 21	18 12	18 59
	16	59 21.5		274 53.2	4.4	18 18.6	3.9	60.7	20	04 53	05 20	05 42	16 09	17 06	18 00	18 51
	17	74 21.7		289 16.6	4.5	18 14.7	4.0	60.7	N 10	05 05	05 30	05 51	15 54	16 53	17 50	18 45
	18	89 21.8	N 11 21.0	303 40.1	4.5	S 18 10.7	4.1	60.7	0	05 14	05 38	05 59	15 40	16 41	17 41	18 39
	19	104 22.0		318 03.6	4.4	18 06.6	4.3	60.8	S 10	05 21	05 46	06 07	15 26	16 29	17 32	18 33
SATURDAY	20	119 22.2		332 27.0	4.5	18 02.3	4.4	60.8	20	05 27	05 53	06 15	15 11	16 16	17 21	18 26
	21	134 22.3	.. 18.5	346 50.5	4.4	17 57.9	4.5	60.8	30	05 32	06 00	06 25	14 54	16 01	17 10	18 19
	22	149 22.5		1 13.9	4.5	17 53.4	4.7	60.8	35	05 35	06 04	06 30	14 44	15 53	17 03	18 15
	23	164 22.6		15 37.4	4.4	17 48.7	4.8	60.8	40	05 37	06 08	06 36	14 33	15 43	16 56	18 10
									45	05 39	06 13	06 43	14 20	15 31	16 47	18 04
24	00	179 22.8	N 11 15.9	30 00.8	4.5	S 17 43.9	4.9	60.9	S 50	05 41	06 18	06 51	14 03	15 17	16 36	17 58
SUNDAY	01	194 23.0		44 24.3	4.4	17 39.0	5.1	60.9	52	05 42	06 21	06 55	13 56	15 10	16 31	17 54
	02	209 23.1		58 47.7	4.5	17 33.9	5.2	60.9	54	05 42	06 23	06 59	13 47	15 03	16 26	17 51
	03	224 23.3	.. 13.4	73 11.2	4.5	17 28.7	5.3	60.9	56	05 43	06 26	07 04	13 37	14 55	16 19	17 47
	04	239 23.5		87 34.7	4.5	17 23.4	5.5	61.0	58	05 43	06 29	07 09	13 26	14 46	16 13	17 43
	05	254 23.6		101 58.2	4.5	17 17.9	5.6	61.0	S 60	05 44	06 32	07 15	13 14	14 35	16 05	17 38
MONDAY	06	269 23.8	N 11 10.8	116 21.7	4.5	S 17 12.3	5.7	61.0								
	07	284 24.0		130 45.2	4.5	17 06.6	5.8	61.0	Lat.	Sun-set	Twilight		Moonset			
	08	299 24.1		145 08.7	4.5	17 00.8	6.0	61.0			Civil	Naut.	23	24	25	26
	09	314 24.3	.. 08.3	159 32.2	4.6	16 54.8	6.1	61.1	o	h m	h m	h m	h m	h m	h m	h m
	10	329 24.5		173 55.8	4.5	16 48.7	6.2	61.1	N 72	20 43	22 42	///	■	■	01 14	03 34
TUESDAY	11	344 24.6		188 19.3	4.6	16 42.5	6.3	61.1	N 70	20 23	21 52	///	23 49	25 51	01 51	03 54
	12	359 24.8	N 11 05.7	202 42.9	4.6	S 16 36.2	6.5	61.1	68	20 07	21 21	///	24 29	00 29	02 16	04 09
	13	14 25.0		217 06.5	4.7	16 29.7	6.6	61.1	66	19 55	20 59	22 53	24 57	00 57	02 36	04 22
	14	29 25.2		231 30.2	4.6	16 23.1	6.7	61.1	64	19 45	20 42	22 08	25 18	01 18	02 52	04 32
	15	44 25.3	.. 03.1	245 53.8	4.7	16 16.4	6.9	61.2	62	19 36	20 27	21 41	00 19	01 35	03 05	04 41
WEDNESDAY	16	59 25.5		260 17.5	4.7	16 09.5	6.9	61.2	60	19 28	20 15	21 20	00 35	01 49	03 16	04 48
	17	74 25.7		274 41.2	4.7	16 02.6	7.1	61.2	N 58	19 21	20 05	21 03	00 48	02 02	03 25	04 55
	18	89 25.8	N 11 00.6	289 04.9	4.7	S 15 55.5	7.2	61.2	56	19 15	19 57	20 49	01 00	02 12	03 34	05 00
	19	104 26.0	10 59.7	303 28.6	4.8	15 48.3	7.3	61.2	54	19 10	19 49	20 38	01 10	02 21	03 41	05 06
	20	119 26.2		317 52.4	4.8	15 41.0	7.4	61.2	52	19 05	19 42	20 27	01 19	02 29	03 48	05 10
THURSDAY	21	134 26.3	.. 58.0	332 16.2	4.9	15 33.6	7.6	61.2	50	19 01	19 36	20 19	01 27	02 37	03 54	05 14
	22	149 26.5		346 40.1	4.8	15 26.0	7.7	61.3	45	18 52	19 23	20 01	01 44	02 52	04 06	05 23
	23	164 26.7		1 03.9	4.9	15 18.3	7.7	61.3	N 40	18 44	19 13	19 46	01 58	03 05	04 17	05 31
	24	179 26.8	N 10 55.4	15 27.8	5.0	S 15 10.6	7.9	61.3	35	18 38	19 04	19 35	02 10	03 16	04 26	05 37
	25	194 27.0		29 51.8	4.9	15 02.7	8.0	61.3	30	18 32	18 57	19 26	02 20	03 25	04 33	05 43
FRIDAY	01	209 27.2		44 15.7	5.0	14 54.7	8.1	61.3	20	18 22	18 45	19 11	02 38	03 42	04 47	05 52
	02	224 27.4	.. 52.8	58 39.7	5.0	14 46.6	8.2	61.3	N 10	18 14	18 35	19 00	02 54	03 56	04 59	06 01
	03	239 27.5		73 03.7	5.1	14 38.4	8.4	61.3	0	18 06	18 27	18 51	03 09	04 09	05 10	06 09
	04	254 27.7		87 27.8	5.1	14 30.0	8.4	61.3	S 10	17 58	18 19	18 44	03 23	04 23	05 21	06 17
	05	269 27.9	N 10 50.2	101 51.9	5.2	S 14 21.6	8.5	61.3	20	17 50	18 12	18 38	03 39	04 37	05 32	06 25
SATURDAY	06	284 28.0		116 16.1	5.2	14 13.1	8.7	61.3	30	17 40	18 05	18 33	03 56	04 53	05 45	06 34
	07	299 28.2		130 40.3	5.2	14 04.4	8.7	61.3	35	17 35	18 01	18 30	04 06	05 02	05 53	06 39
	08	314 28.4	.. 47.7	145 04.5	5.2	13 55.7	8.9	61.4	40	17 29	17 57	18 28	04 18	05 12	06 01	06 45
	09	329 28.6		159 28.7	5.3	13 46.8	8.9	61.4	45	17 22	17 52	18 26	04 31	05 24	06 11	06 52
	10	344 28.7		173 53.0	5.4	13 37.9	9.1	61.4	S 50	17 14	17 47	18 25	04 48	05 39	06 23	07 01
SUNDAY	11	359 28.9	N 10 45.1	188 17.4	5.4	S 13 28.8	9.1	61.4	52	17 10	17 45	18 24	04 56	05 46	06 28	07 04
	12	14 29.1		202 41.8	5.4	13 19.7	9.2	61.4	54	17 06	17 42	18 24	05 05	05 54	06 35	07 08
	13	29 29.2		217 06.2	5.5	13 10.5	9.4	61.4	56	17 02	17 40	18 23	05 14	06 02	06 41	07 13
	14	44 29.4	.. 42.5	231 30.7	5.5	13 01.1	9.4	61.4	58	16 56	17 37					

G.M.T.	ARIES			VENUS -3.5			MARS +1.9			JUPITER -2.3			SATURN +0.5			STARS		
	G.H.A.	G.H.A.	Dec.	G.H.A.	Dec.	G.H.A.	Dec.	G.H.A.	Dec.	G.H.A.	Dec.	G.H.A.	Dec.	Name	S.H.A.	Dec.		
d h																		
26 00	334 00.2	216 22.2	N20 23.6	148 33.0	S 1 48.9	33 07.5	S21 05.4	37 59.5	S21 29.9	Acamar	315 48.0	S 40 27.3						
01	349 02.6	231 21.5	23.2	163 34.0	49.5	48 10.2	05.5	53 02.1	30.0	Achernar	335 55.6	S 57 25.7						
02	4 05.1	246 20.9	22.8	178 35.0	50.2	63 12.9	05.5	68 04.7	30.0	Acrux	173 53.7	S 62 53.2						
03	19 07.6	261 20.2	.. 22.3	193 36.0	.. 50.8	78 15.6	.. 05.6	83 07.3	.. 30.0	Adhara	255 43.6	S 28 55.0						
04	34 10.0	276 19.6	21.9	208 37.0	51.5	93 18.3	05.6	98 09.8	30.0	Aldebaran	291 34.4	N 16 25.9						
05	49 12.5	291 19.0	21.5	223 38.0	52.2	108 21.0	05.6	113 12.4	30.1									
06	64 15.0	306 18.3	N20 21.1	238 39.0	S 1 52.8	123 23.7	S21 05.7	128 15.0	S21 30.1	Alioth	166 55.5	N 56 10.4						
07	79 17.4	321 17.7	20.7	253 40.0	53.5	138 26.4	05.7	143 17.6	30.1	Alkaid	153 30.1	N 49 30.6						
08	94 19.9	336 17.1	20.3	268 41.0	54.1	153 29.1	05.8	158 20.2	30.1	Al Na'ir	28 32.4	S 47 08.8						
09	109 22.3	351 16.4	.. 19.9	283 42.0	.. 54.8	168 31.8	.. 05.8	173 22.8	.. 30.1	Alnilam	276 26.3	S 1 13.5						
10	124 24.8	6 15.8	19.5	298 43.0	55.5	183 34.4	05.9	188 25.4	30.2	Alphard	218 34.9	S 8 29.4						
11	139 27.3	21 15.1	19.1	313 43.9	56.1	198 37.1	05.9	203 28.0	30.2									
12	154 29.7	36 14.5	N20 18.7	328 44.9	S 1 56.8	213 39.8	S21 06.0	218 30.6	S21 30.2	Alphecca	126 44.3	N 26 50.9						
13	169 32.2	51 13.9	18.3	343 45.9	57.4	228 42.5	06.0	233 33.2	30.2	Alpheratz	358 23.7	N 28 52.7						
14	184 34.7	66 13.2	17.9	358 46.9	58.1	243 45.2	06.1	248 35.8	30.3	Altair	62 46.2	N 8 46.2						
15	199 37.1	81 12.6	.. 17.5	13 47.9	.. 58.8	258 47.9	.. 06.1	263 38.4	.. 30.3	Ankaa	353 54.0	S 42 30.7						
16	214 39.6	96 12.0	17.0	28 48.9	1 59.4	273 50.6	06.1	278 41.0	30.3	Antares	113 14.3	S 26 20.8						
17	229 42.1	111 11.3	16.6	43 49.9	2 00.1	288 53.3	06.2	293 43.5	30.3									
18	244 44.5	126 10.7	N20 16.2	58 50.9	S 2 00.7	303 55.9	S21 06.2	308 46.1	S21 30.4	Arcturus	146 31.6	N 19 23.2						
19	259 47.0	141 10.0	15.8	73 51.9	01.4	318 58.6	06.3	323 48.7	30.4	Atria	108 51.2	S 68 57.7						
20	274 49.5	156 09.4	15.4	88 52.9	02.1	334 01.3	06.3	338 51.3	30.4	Avior	234 34.6	S 59 23.0						
21	289 51.9	171 08.8	.. 15.0	103 53.9	.. 02.7	349 04.0	.. 06.4	353 53.9	.. 30.4	Bellatrix	279 14.2	N 6 18.9						
22	304 54.4	186 08.1	14.5	118 54.9	03.4	4 06.7	06.4	8 56.5	30.5	Betelgeuse	271 43.9	N 7 24.0						
23	319 56.8	201 07.5	14.1	133 55.9	04.0	19 09.4	06.5	23 59.1	30.5									
27 00	334 59.3	216 06.9	N20 13.7	148 56.9	S 2 04.7	34 12.0	S21 06.5	39 01.7	S21 30.5	Canopus	264 13.8	S 52 40.3						
01	350 01.8	231 06.2	13.3	163 57.9	05.4	49 14.7	06.6	54 04.3	30.5	Capella	281 32.5	N 45 57.4						
02	5 04.2	246 05.6	12.8	178 58.9	06.0	64 17.4	06.6	69 06.9	30.6	Deneb	49 57.7	N 45 08.8						
03	20 06.7	261 04.9	.. 12.4	193 59.9	.. 06.7	79 20.1	.. 06.6	84 09.5	.. 30.6	Denebola	183 13.9	N 14 47.4						
04	35 09.2	276 04.3	12.0	209 00.9	07.3	94 22.8	06.7	99 12.0	30.6	Diphda	349 34.9	S 18 11.7						
05	50 11.6	291 03.7	11.6	224 01.9	08.0	109 25.5	06.7	114 14.6	30.6									
06	65 14.1	306 03.0	N20 11.1	239 02.9	S 2 08.7	124 28.1	S21 06.8	129 17.2	S21 30.6	Dubhe	194 40.4	N 61 57.6						
07	80 16.6	321 02.4	10.7	254 03.9	09.3	139 30.8	06.8	144 19.8	30.7	Elnath	279 02.3	N 28 34.4						
08	95 19.0	336 01.8	10.3	269 04.9	10.0	154 33.5	06.9	159 22.4	30.7	Eltanin	91 04.1	N 51 30.0						
09	110 21.5	351 01.1	.. 09.8	284 05.9	.. 10.6	169 36.2	.. 06.9	174 25.0	.. 30.7	Enif	34 25.3	N 9 42.1						
10	125 24.0	6 00.5	09.4	299 06.9	11.3	184 38.9	07.0	189 27.6	30.7	Fomalhaut	16 06.8	S 29 49.4						
11	140 26.4	20 59.9	09.0	314 07.9	12.0	199 41.6	07.0	204 30.2	30.8									
12	155 28.9	35 59.2	N20 08.5	329 08.9	S 2 12.6	214 44.2	S21 07.0	219 32.8	S21 30.8	Gacrux	172 45.0	S 56 53.9						
13	170 31.3	50 58.6	08.1	344 09.9	13.3	229 46.9	07.1	234 35.3	30.8	Gienah	176 32.9	S 17 19.6						
14	185 33.8	65 58.0	07.7	359 10.9	13.9	244 49.6	07.1	249 37.9	30.8	Hadar	149 43.9	S 60 11.4						
15	200 36.3	80 57.3	.. 07.2	14 11.9	.. 14.6	259 52.3	.. 07.2	264 40.5	.. 30.9	Hamal	328 44.8	N 23 16.8						
16	215 38.7	95 56.7	06.8	29 12.9	15.3	274 55.0	07.2	279 43.1	30.9	Kaus Aust.	84 35.6	S 34 24.2						
17	230 41.2	110 56.0	06.4	44 13.9	15.9	289 57.6	07.3	294 45.7	30.9									
18	245 43.7	125 55.4	N20 05.9	59 14.9	S 2 16.6	305 00.3	S21 07.3	309 48.3	S21 30.9	Kochab	137 18.8	N 74 19.2						
19	260 46.1	140 54.8	05.5	74 15.9	17.3	320 03.0	07.3	324 50.9	31.0	Markab	14 17.1	N 15 00.0						
20	275 48.6	155 54.1	05.0	89 16.9	17.9	335 05.7	07.4	339 53.5	31.0	Menkar	314 56.0	N 3 56.4						
21	290 51.1	170 53.5	.. 04.6	104 17.8	.. 18.6	350 08.4	.. 07.4	354 56.1	.. 31.0	Menkent	148 54.0	S 36 10.9						
22	305 53.5	185 52.9	04.2	119 18.8	19.2	5 11.0	07.5	9 58.6	31.0	Miaplacidus	221 48.8	S 69 33.5						
23	320 56.0	200 52.2	03.7	134 19.8	19.9	20 13.7	07.5	25 01.2	31.0									
28 00	335 58.4	215 51.6	N20 03.3	149 20.8	S 2 20.6	35 16.4	S21 07.6	40 03.8	S21 31.1	Mirfak	309 36.4	N 49 43.3						
01	351 00.9	230 51.0	02.8	164 21.8	21.2	50 19.1	07.6	55 06.4	31.1	Nunki	76 46.6	S 26 20.6						
02	6 03.4	245 50.3	02.4	179 22.8	21.9	65 21.7	07.6	70 09.0	31.1	Peacock	54 20.4	S 56 51.6						
03	21 05.8	260 49.7	.. 01.9	194 23.8	.. 22.5	80 24.4	.. 07.7	85 11.6	.. 31.1	Pollux	244 15.9	N 28 07.1						
04	36 08.3	275 49.1	01.5	209 24.8	23.2	95 27.1	07.7	100 14.2	31.2	Procyon	245 41.0	N 5 19.5						
05	51 10.8	290 48.4	01.0	224 25.8	23.9	110 29.8	07.8	115 16.8	31.2									
06	66 13.2	305 47.8	N20 00.6	239 26.8	S 2 24.5	125 32.4	S21 07.8	130 19.3	S21 31.2	Rasalhague	96 42.7	N 12 35.5						
07	81 15.7	320 47.2	20 00.1	254 27.8	25.2	140 35.1	07.9	145 21.9	31.2	Regulus	208 25.5	N 12 09.4						
08	96 18.2	335 46.5	19 59.7	269 28.8	25.8	155 37.8	07.9	160 24.5	31.3	Rigel	281 49.8	S 8 14.6						
09	111 20.6	350 45.9	.. 59.2	284 29.8	.. 26.5	170 40.5	.. 07.9	175 27.1	.. 31.3	Rigel Kent.	140 45.5	S 60 40.7						
10	126 23.1	5 45.3	58.8	299 30.8	27.2	185 43.1	08.0	190 29.7	31.3	Sabik	102 57.4	S 15 40.6						
11	141 25.6	20 44.6	58.3	314 31.8	27.8	200 45.8	08.0	205 32.3	31.3									
12	156 28.0	35 44.0	N19 57.8	329 32.8	S 2 28.5	215 48.5	S21 08.1	220 34.9	S21 31.3	Schedar	350 24.8	N 56 19.5						
13	171 30.5	50 43.4	57.4	344 33.8	29.1	230 51.2	08.1	235 37.4	31.4	Shaula	97 15.0	S 37 04.6						
14	186 32.9	65 42.7	56.9	359 34.7	29.8	245 53.8	08.2	250 40.0	31.4	Sirius	259 08.5	S 16 39.6						
15	201 35.4	80 42.1	.. 56.5	14 35.7	.. 30.5	260 56.5	.. 08.2	265 42.6	.. 31.4	Spica	159 12.8	S 10 57.5						
16	216 37.9	95 41.5	56.0	29 36.7	31.1	275 59.2	08.2	280 45.2	31.4	Suhail	223 21.7	S 43 16.5						
17	231 40.3	110 40.8	55.5	44 37.7	31.8	291 01.9	08.3	295 47.8	31.5									
18	246 42.8	125 40.2	N19 55.1	59 38.7	S 2 32.4	306 04.5	S21 08.3	310 50.4	S21 31.5	Vega	81 05.2	N 38 45.2						
19	261 45.3	140 39.6	54.6	74 39.7	33.1	321 07.2	08.4	325 53.0	31.5	Zuben'ubi	137 48.9	S 15 52.9						
20	276 47.7	155 38.9	54.1	89 40.7	33.8	336 09.9	08.4	340 55.5	31.5									
21	291 50.2	170 38.3	.. 53.7	104 41.7	.. 34.4	351 12.6	.. 08.4	355 58.1	.. 31.6									
22	306 52.7	185 37.7	53.2	119 42.7	35.1	6 15.2	08.5	11 00.7	31.6	Venus	241 07.6	9 36						
23	321 55.1	200 37.0	52.7	134 43.7	35.7	21 17.9	08.5	26 03.3	3									

G.M.T.	SUN		MOON					Lat.	Twilight		Sun-rise	Moonrise					
									Naut.	Civil		26	27	28	29		
	G.H.A.	Dec.	G.H.A.	<i>v</i>	Dec.	<i>d</i>	H.P.										
<i>d</i> <i>h</i>	<i>o</i>	<i>o</i>	<i>o</i>	<i>o</i>	<i>o</i>	<i>o</i>	<i>o</i>	<i>o</i>	<i>h</i> <i>m</i>	<i>h</i> <i>m</i>	<i>h</i> <i>m</i>	<i>h</i> <i>m</i>	<i>h</i> <i>m</i>	<i>h</i> <i>m</i>	<i>h</i> <i>m</i>		
SATURDAY	26	00	179 31.0	N10 34.7	1 13.1	5.9	S11 33.2	10.2	61.4	N 72	///	01 47	03 34	20 25	20 16	20 08	20 00
	01	194 31.2	33.8	15 38.0	6.0	11 23.0	10.3	61.4	N 70	///	02 28	03 52	20 13	20 12	20 10	20 09	
	02	209 31.3	33.0	30 03.0	6.1	11 12.7	10.3	61.4	68	///	02 55	04 06	20 04	20 08	20 12	20 16	
	03	224 31.5	32.1	44 28.1	6.1	11 02.4	10.5	61.4	66	01 32	03 15	04 18	19 56	20 05	20 13	20 22	
	04	239 31.7	31.2	58 53.2	6.1	10 51.9	10.5	61.4	64	02 09	03 31	04 27	19 49	20 03	20 15	20 27	
	05	254 31.9	30.4	73 18.3	6.2	10 41.4	10.5	61.3	62	02 34	03 44	04 35	19 43	20 00	20 16	20 31	
	06	269 32.0	N10 29.5	87 43.5	6.2	S10 30.9	10.7	61.3	60	02 53	03 55	04 42	19 38	19 58	20 16	20 35	
	07	284 32.2	28.6	102 08.7	6.3	10 20.2	10.7	61.3	N 58	03 08	04 05	04 48	19 34	19 56	20 17	20 38	
	08	299 32.4	27.8	116 34.0	6.4	10 09.5	10.7	61.3	56	03 21	04 13	04 54	19 29	19 55	20 18	20 41	
	09	314 32.6	26.9	130 59.4	6.4	9 58.8	10.9	61.3	54	03 32	04 20	04 59	19 26	19 53	20 19	20 44	
	10	329 32.7	26.0	145 24.8	6.4	9 47.9	10.9	61.3	52	03 42	04 27	05 03	19 23	19 52	20 19	20 47	
	11	344 32.9	25.2	159 50.2	6.6	9 37.0	10.9	61.3	50	03 50	04 33	05 07	19 20	19 51	20 20	20 49	
	12	359 33.1	N10 24.3	174 15.8	6.5	S 9 26.1	11.1	61.3	45	04 07	04 45	05 15	19 13	19 48	20 21	20 54	
	13	14 33.3	23.4	188 41.3	6.6	9 15.0	11.0	61.3	N 40	04 21	04 54	05 23	19 08	19 46	20 22	20 58	
	14	29 33.4	22.6	203 06.9	6.7	9 04.0	11.2	61.3	35	04 32	05 03	05 29	19 03	19 44	20 23	21 02	
	15	44 33.6	21.7	217 32.6	6.7	8 52.8	11.2	61.3	30	04 40	05 09	05 34	18 59	19 42	20 24	21 05	
	16	59 33.8	20.8	231 58.3	6.8	8 41.6	11.2	61.2	20	04 54	05 21	05 43	18 51	19 39	20 26	21 10	
	17	74 34.0	19.9	246 24.1	6.8	8 30.4	11.3	61.2	N 10	05 05	05 30	05 51	18 45	19 37	20 27	21 15	
	18	89 34.1	N10 19.1	260 49.9	6.8	S 8 19.1	11.4	61.2	0	05 13	05 37	05 58	18 39	19 34	20 28	21 20	
	19	104 34.3	18.2	275 15.7	7.0	8 07.7	11.4	61.2	S 10	05 19	05 44	06 05	18 33	19 32	20 29	21 25	
	20	119 34.5	17.3	289 41.7	6.9	7 56.3	11.4	61.2	20	05 25	05 51	06 13	18 26	19 29	20 31	21 30	
	21	134 34.7	16.5	304 07.6	7.1	7 44.9	11.5	61.2	30	05 29	05 57	06 21	18 19	19 27	20 32	21 36	
	22	149 34.9	15.6	318 33.7	7.0	7 33.4	11.6	61.2	35	05 31	06 01	06 26	18 15	19 25	20 33	21 39	
23	164 35.0	14.7	332 59.7	7.2	7 21.8	11.5	61.1	40	05 33	06 04	06 32	18 10	19 23	20 34	21 43		
								45	05 34	06 08	06 38	18 04	19 21	20 35	21 48		
SUNDAY	27	00	179 35.2	N10 13.8	347 25.9	7.1	S 7 10.3	11.7	61.1	S 50	05 35	06 12	06 45	17 58	19 18	20 37	21 53
	01	194 35.4	13.0	1 52.0	7.3	6 58.6	11.6	61.1	52	05 35	06 14	06 49	17 54	19 17	20 38	21 56	
	02	209 35.6	12.1	16 18.3	7.3	6 47.0	11.7	61.1	54	05 36	06 17	06 53	17 51	19 16	20 38	21 59	
	03	224 35.7	11.2	30 44.6	7.3	6 35.3	11.8	61.1	56	05 36	06 19	06 57	17 47	19 14	20 39	22 02	
	04	239 35.9	10.4	45 10.9	7.4	6 23.5	11.7	61.1	58	05 36	06 21	07 01	17 43	19 13	20 40	22 05	
	05	254 36.1	09.5	59 37.3	7.4	6 11.8	11.8	61.0	S 60	05 36	06 24	07 06	17 38	19 11	20 41	22 09	
	06	269 36.3	N10 08.6	74 03.7	7.5	S 6 00.0	11.9	61.0									
	07	284 36.5	07.7	88 30.2	7.5	5 48.1	11.8	61.0	Lat.	Sun-set	Twilight	Moonset					
	08	299 36.6	06.9	102 56.7	7.6	5 36.3	11.9	61.0			Civil	Naut.	26	27	28	29	
	09	314 36.8	06.0	117 23.3	7.7	5 24.4	11.9	61.0	<i>o</i>	<i>h</i> <i>m</i>	<i>h</i> <i>m</i>	<i>h</i> <i>m</i>	<i>h</i> <i>m</i>	<i>h</i> <i>m</i>	<i>h</i> <i>m</i>	<i>h</i> <i>m</i>	
	10	329 37.0	05.1	131 50.0	7.6	5 12.5	12.0	60.9	N 72	20 25	22 08	///	03 34	05 45	07 48	09 47	
	11	344 37.2	04.2	146 16.6	7.8	5 00.5	11.9	60.9	N 70	20 08	21 30	///	03 54	05 54	07 50	09 41	
	12	359 37.4	N10 03.4	160 43.4	7.8	S 4 48.6	12.0	60.9	68	19 54	21 04	23 37	04 09	06 02	07 51	09 36	
	13	14 37.5	02.5	175 10.2	7.8	4 36.6	12.0	60.9	66	19 43	20 45	22 24	04 22	06 08	07 52	09 32	
	14	29 37.7	01.6	189 37.0	7.9	4 24.6	12.1	60.8	64	19 34	20 29	21 50	04 32	06 13	07 52	09 28	
	15	44 37.9	10 00.7	204 03.9	7.9	4 12.5	12.0	60.8	62	19 26	20 16	21 26	04 41	06 18	07 53	09 25	
	16	59 38.1	9 59.8	218 30.8	8.0	4 00.5	12.1	60.8	60	19 19	20 06	21 07	04 48	06 22	07 54	09 23	
	17	74 38.3	59.0	232 57.8	8.0	3 48.4	12.0	60.8	N 58	19 13	19 56	20 52	04 55	06 25	07 54	09 20	
	18	89 38.4	N 9 58.1	247 24.8	8.1	S 3 36.4	12.1	60.8	56	19 08	19 48	20 40	05 00	06 28	07 55	09 18	
	19	104 38.6	57.2	261 51.9	8.1	3 24.3	12.1	60.7	54	19 03	19 41	20 29	05 06	06 31	07 55	09 17	
	20	119 38.8	56.3	276 19.0	8.2	3 12.2	12.1	60.7	52	18 59	19 35	20 20	05 10	06 33	07 56	09 15	
	21	134 39.0	55.5	290 46.2	8.2	3 00.1	12.1	60.7	50	18 55	19 29	20 11	05 14	06 36	07 56	09 13	
	22	149 39.2	54.6	305 13.4	8.2	2 48.0	12.1	60.6	45	18 47	19 17	19 54	05 23	06 41	07 57	09 10	
23	164 39.4	53.7	319 40.6	8.3	2 35.9	12.2	60.6	N 40	18 40	19 08	19 41	05 31	06 45	07 57	09 07		
MONDAY	28	00	179 39.5	N 9 52.8	334 07.9	8.4	S 2 23.7	12.1	60.6	35	18 34	19 00	19 31	05 37	06 48	07 58	09 05
	01	194 39.7	51.9	348 35.3	8.4	2 11.6	12.1	60.6	30	18 29	18 53	19 22	05 43	06 51	07 58	09 03	
	02	209 39.9	51.1	3 02.7	8.4	1 59.5	12.1	60.5	20	18 20	18 42	19 08	05 52	06 57	07 59	08 59	
	03	224 40.1	50.2	17 30.1	8.5	1 47.4	12.2	60.5	N 10	18 12	18 33	18 58	06 01	07 01	08 00	08 56	
	04	239 40.3	49.3	31 57.6	8.5	1 35.2	12.1	60.5	0	18 05	18 26	18 50	06 09	07 05	08 00	08 53	
	05	254 40.5	48.4	46 25.1	8.6	1 23.1	12.1	60.4	S 10	17 58	18 19	18 44	06 17	07 10	08 01	08 50	
	06	269 40.6	N 9 47.5	60 52.7	8.6	S 1 11.0	12.1	60.4	20	17 50	18 13	18 38	06 25	07 14	08 01	08 47	
	07	284 40.8	46.7	75 20.3	8.6	0 58.9	12.1	60.4	30	17 42	18 06	18 34	06 34	07 19	08 02	08 43	
	08	299 41.0	45.8	89 47.9	8.7	0 46.8	12.1	60.4	35	17 37	18 03	18 32	06 39	07 22	08 02	08 41	
	09	314 41.2	44.9	104 15.6	8.8	0 34.7	12.1	60.3	40	17 32	17 59	18 31	06 45	07 25	08 03	08 39	
	10	329 41.4	44.0	118 43.4	8.7	0 22.6	12.1	60.3	45	17 26	17 56	18 30	06 52	07 29	08 03	08 36	
	11	344 41.6	43.1	133 11.1	8.8	S 0 10.5	12.1	60.3	S 50	17 19	17 51	18 29	07 01	07 33	08 04	08 32	
	12	359 41.7	N 9 42.2	147 38.9	8.9	N 0 01.6	12.0	60.2	52	17 15	17 49	18 29	07 04	07 35	08 04	08 31	
	13	14 41.9	41.4	162 06.8	8.9	0 13.6	12.0	60.2	54	17 11	17 47	18 29	07 08	07 38	08 04	08 29	
	14	29 42.1	40.5	176 34.7	8.9	0 25.6	12.1										

G.M.T.	ARIES			VENUS -3.4			MARS +1.9			JUPITER -2.2			SATURN +0.5			STARS		
	G.H.A.	G.H.A.	Dec.	G.H.A.	G.H.A.	Dec.	G.H.A.	G.H.A.	Dec.	G.H.A.	G.H.A.	Dec.	G.H.A.	G.H.A.	Dec.	Name	S.H.A.	Dec.
29 00	336 57.6	215 36.4	N19 52.3	149 44.7	S 2 36.4		36 20.6	S21 08.6		41 05.9	S21 31.6		Acamar	315 47.9	S 40 27.3			
01	352 00.0	230 35.8	51.8	164 45.7	37.1		51 23.2	08.6		56 08.5	31.6		Achernar	335 55.6	S 57 25.7			
02	7 02.5	245 35.2	51.3	179 46.7	37.7		66 25.9	08.7		71 11.0	31.7		Acrux	173 53.7	S 62 53.2			
03	22 05.0	260 34.5	50.9	194 47.6	38.4		81 28.6	08.7		86 13.6	31.7		Adhara	255 43.5	S 28 55.0			
04	37 07.4	275 33.9	50.4	209 48.6	39.0		96 31.3	08.7		101 16.2	31.7		Aldebaran	291 34.4	N 16 25.9			
05	52 09.9	290 33.3	49.9	224 49.6	39.7		111 33.9	08.8		116 18.8	31.7							
06	67 12.4	305 32.6	N19 49.4	239 50.6	S 2 40.4		126 36.6	S21 08.8		131 21.4	S21 31.8		Alioth	166 55.5	N 56 10.4			
07	82 14.8	320 32.0	49.0	254 51.6	41.0		141 39.3	08.9		146 24.0	31.8		Alkaid	153 30.1	N 49 30.6			
08	97 17.3	335 31.4	48.5	269 52.6	41.7		156 41.9	08.9		161 26.5	31.8		Al Na'ir	28 32.4	S 47 08.8			
09	112 19.8	350 30.7	48.0	284 53.6	42.3		171 44.6	08.9		176 29.1	31.8		Alnilam	276 26.2	S 1 13.5			
10	127 22.2	5 30.1	47.5	299 54.6	43.0		186 47.3	09.0		191 31.7	31.8		Alphard	218 34.9	S 8 29.4			
11	142 24.7	20 29.5	47.1	314 55.6	43.7		201 49.9	09.0		206 34.3	31.9							
12	157 27.2	35 28.9	N19 46.6	329 56.6	S 2 44.3		216 52.6	S21 09.1		221 36.9	S21 31.9		Alphecca	126 44.3	N 26 50.9			
13	172 29.6	50 28.2	46.1	344 57.6	45.0		231 55.3	09.1		236 39.5	31.9		Alpheratz	358 23.7	N 28 52.7			
14	187 32.1	65 27.6	45.6	359 58.5	45.6		246 57.9	09.1		251 42.0	31.9		Altair	62 46.2	N 8 46.2			
15	202 34.5	80 27.0	45.1	14 59.5	46.3		262 00.6	09.2		266 44.6	32.0		Ankaa	353 54.0	S 42 30.7			
16	217 37.0	95 26.3	44.6	30 00.5	47.0		277 03.3	09.2		281 47.2	32.0		Antares	113 14.3	S 26 20.8			
17	232 39.5	110 25.7	44.2	45 01.5	47.6		292 05.9	09.3		296 49.8	32.0							
18	247 41.9	125 25.1	N19 43.7	60 02.5	S 2 48.3		307 08.6	S21 09.3		311 52.4	S21 32.0		Arcturus	146 31.7	N 19 23.2			
19	262 44.4	140 24.5	43.2	75 03.5	48.9		322 11.3	09.3		326 54.9	32.1		Atria	108 51.3	S 68 57.7			
20	277 46.9	155 23.8	42.7	90 04.5	49.6		337 13.9	09.4		341 57.5	32.1		Avior	234 34.5	S 59 23.0			
21	292 49.3	170 23.2	42.2	105 05.5	50.3		352 16.6	09.4		357 00.1	32.1		Bellatrix	279 14.1	N 6 18.9			
22	307 51.8	185 22.6	41.7	120 06.5	50.9		7 19.3	09.5		12 02.7	32.1		Betelgeuse	271 43.8	N 7 24.0			
23	322 54.3	200 21.9	41.2	135 07.5	51.6		22 21.9	09.5		27 05.3	32.1							
30 00	337 56.7	215 21.3	N19 40.7	150 08.4	S 2 52.2		37 24.6	S21 09.6		42 07.8	S21 32.2		Canopus	264 13.8	S 52 40.3			
01	352 59.2	230 20.7	40.2	165 09.4	52.9		52 27.2	09.6		57 10.4	32.2		Capella	281 32.5	N 45 57.4			
02	8 01.6	245 20.1	39.7	180 10.4	53.6		67 29.9	09.6		72 13.0	32.2		Deneb	49 57.7	N 45 08.8			
03	23 04.1	260 19.4	39.2	195 11.4	54.2		82 32.6	09.7		87 15.6	32.2		Denebola	183 13.9	N 14 47.4			
04	38 06.6	275 18.8	38.8	210 12.4	54.9		97 35.2	09.7		102 18.2	32.3		Diphda	349 34.9	S 18 11.7			
05	53 09.0	290 18.2	38.3	225 13.4	55.5		112 37.9	09.7		117 20.7	32.3							
06	68 11.5	305 17.6	N19 37.8	240 14.4	S 2 56.2		127 40.6	S21 09.8		132 23.3	S21 32.3		Dubhe	194 40.4	N 61 57.6			
07	83 14.0	320 16.9	37.3	255 15.4	56.9		142 43.2	09.8		147 25.9	32.3		Elnath	279 02.3	N 28 34.4			
08	98 16.4	335 16.3	36.8	270 16.4	57.5		157 45.9	09.9		162 28.5	32.3		Eltanin	91 04.2	N 51 30.0			
09	113 18.9	350 15.7	36.3	285 17.3	58.2		172 48.5	09.9		177 31.1	32.4		Enif	34 25.3	N 9 42.1			
10	128 21.4	5 15.0	35.8	300 18.3	58.9		187 51.2	09.9		192 33.6	32.4		Fomalhaut	16 06.8	S 29 49.4			
11	143 23.8	20 14.4	35.3	315 19.3	59.5		202 53.9	10.0		207 36.2	32.4							
12	158 26.3	35 13.8	N19 34.7	330 20.3	S 3 00.2		217 56.5	S21 10.0		222 38.8	S21 32.4		Gacrux	172 45.0	S 56 53.9			
13	173 28.8	50 13.2	34.2	345 21.3	00.8		232 59.2	10.1		237 41.4	32.4		Gienah	176 32.9	S 17 19.6			
14	188 31.2	65 12.5	33.7	0 22.3	01.5		248 01.8	10.1		252 44.0	32.5		Hadar	149 43.9	S 60 11.4			
15	203 33.7	80 11.9	33.2	15 23.3	02.2		263 04.5	10.1		267 46.5	32.5		Hamal	328 44.8	N 23 16.8			
16	218 36.1	95 11.3	32.7	30 24.3	02.8		278 07.2	10.2		282 49.1	32.5		Kaus Aust.	84 35.6	S 34 24.2			
17	233 38.6	110 10.7	32.2	45 25.2	03.5		293 09.8	10.2		297 51.7	32.5							
18	248 41.1	125 10.0	N19 31.7	60 26.2	S 3 04.1		308 12.5	S21 10.3		312 54.3	S21 32.6		Kochab	137 18.8	N 74 19.2			
19	263 43.5	140 09.4	31.2	75 27.2	04.8		323 15.1	10.3		327 56.8	32.6		Markab	14 17.1	N 15 00.0			
20	278 46.0	155 08.8	30.7	90 28.2	05.5		338 17.8	10.3		342 59.4	32.6		Menkar	314 55.9	N 3 56.4			
21	293 48.5	170 08.2	30.2	105 29.2	06.1		353 20.5	10.4		358 02.0	32.6		Menkent	148 54.0	S 36 10.9			
22	308 50.9	185 07.5	29.7	120 30.2	06.8		8 23.1	10.4		13 04.6	32.6		Miaplacidus	221 48.8	S 69 33.4			
23	323 53.4	200 06.9	29.1	135 31.2	07.4		23 25.8	10.5		28 07.2	32.7							
31 00	338 55.9	215 06.3	N19 28.6	150 32.2	S 3 08.1		38 28.4	S21 10.5		43 09.7	S21 32.7		Mirfak	309 36.4	N 49 43.3			
01	353 58.3	230 05.7	28.1	165 33.1	08.8		53 31.1	10.5		58 12.3	32.7		Nunki	76 46.6	S 26 20.7			
02	9 00.8	245 05.0	27.6	180 34.1	09.4		68 33.7	10.6		73 14.9	32.7		Peacock	54 20.4	S 56 51.6			
03	24 03.2	260 04.4	27.1	195 35.1	10.1		83 36.4	10.6		88 17.5	32.7		Pollux	244 15.9	N 28 07.1			
04	39 05.7	275 03.8	26.6	210 36.1	10.7		98 39.1	10.6		103 20.0	32.8		Procyon	245 41.0	N 5 19.5			
05	54 08.2	290 03.2	26.0	225 37.1	11.4		113 41.7	10.7		118 22.6	32.8							
06	69 10.6	305 02.6	N19 25.5	240 38.1	S 3 12.1		128 44.4	S21 10.7		133 25.2	S21 32.8		Rasalhague	96 42.7	N 12 35.5			
07	84 13.1	320 01.9	25.0	255 39.1	12.7		143 47.0	10.8		148 27.8	32.8		Regulus	208 25.5	N 12 09.4			
08	99 15.6	335 01.3	24.5	270 40.0	13.4		158 49.7	10.8		163 30.3	32.9		Rigel	281 49.8	S 8 14.6			
09	114 18.0	350 00.7	23.9	285 41.0	14.0		173 52.3	10.8		178 32.9	32.9		Rigel Kent.	140 45.6	S 60 40.7			
10	129 20.5	5 00.1	23.4	300 42.0	14.7		188 55.0	10.9		193 35.5	32.9		Sabik	102 57.4	S 15 40.6			
11	144 23.0	19 59.4	22.9	315 43.0	15.4		203 57.6	10.9		208 38.1	32.9							
12	159 25.4	34 58.8	N19 22.4	330 44.0	S 3 16.0		219 00.3	S21 11.0		223 40.6	S21 32.9		Schedar	350 24.7	N 56 19.5			
13	174 27.9	49 58.2	21.8	345 45.0	16.7		234 02.9	11.0		238 43.2	33.0		Shaula	97 15.0	S 37 04.6			
14	189 30.4	64 57.6	21.3	0 46.0	17.3		249 05.6	11.0		253 45.8	33.0		Sirius	259 08.5	S 16 39.6			
15	204 32.8	79 57.0	20.8	15 46.9	18.0		264 08.3	11.1		268 48.4	33.0		Spica	159 12.8	S 10 57.5			
16	219 35.3	94 56.3	20.2	30 47.9	18.7		279 10.9	11.1		283 50.9	33.0		Suhail	223 21.7	S 43 16.5			
17	234 37.7	109 55.7	19.7	45 48.9	19.3		294 13.6	11.1		298 53.5	33.0							
18	249 40.2	124 55.1	N19 19.2	60 49.9	S 3 20.0		309 16.2	S21 11.2		313 56.1	S21 33.1		Vega	81 05.3	N 38 45.2			
19	264 42.7	139 54.5	18.6	75 50.9	20.6		324 18.9	11.2		328 58.7	33.1		Zuben'ubi	137 49.0	S 15 52.9			
20	279 45.1	154 53.9	18.1	90 51.9	21.3		339 21.5	11.3		344 01.2	33.1							
21	294 47.6	169 53.2	17.6	105 52.8	22.0		354 24.2	11.3		359 03.8	33.1							
22	309 50.1	184 52.6	17.0	120 53.8	22.6		9 26.8	11.3		14 06.4	33.1		Venus	237 24.6	h m			

G.M.T.	SUN			MOON				Lat.	Twilight		Sun-rise	Moonrise					
	G.H.A.		Dec.	G.H.A.		Dec.	H.P.		Naut.	Civil		29		30		31	I
	d	h		d	h							d	h	d	h		
29 00	179	44.0	N 9 31.6	321	15.6	9.3	N 2 24.9	11.8	59.8	N 72	02 13	03 50	20 00	19 52	19 42	19 27	
01	194	44.2	30.7	335	43.9	9.3	2 36.7	11.7	59.8	N 70	01 05	03 09	04 18	20 09	20 08	20 08	20 09
02	209	44.3	29.9	350	12.2	9.4	2 48.4	11.7	59.7	68	01 55	03 27	04 27	20 16	20 20	20 27	20 38
03	224	44.5	29.0	4 40.6	9.3	3 00.1	11.7	59.7	66	02 24	03 42	04 36	20 22	20 31	20 43	21 00	
04	239	44.7	28.1	19 08.9	9.5	3 11.8	11.7	59.7	64	02 46	03 54	04 43	20 27	20 40	20 56	21 17	
05	254	44.9	27.2	33 37.4	9.4	3 23.5	11.6	59.6	62	02 46	03 54	04 43	20 31	20 48	21 07	21 32	
06	269	45.1	N 9 26.3	48 05.8	9.5	N 3 35.1	11.6	59.6	60	03 03	04 04	04 49	20 35	20 54	21 17	21 44	
07	284	45.3	25.4	62 34.3	9.5	3 46.7	11.5	59.6	N 58	03 17	04 12	04 55	20 38	21 00	21 25	21 55	
08	299	45.5	24.5	77 02.8	9.5	3 58.2	11.5	59.5	56	03 29	04 20	05 00	20 41	21 06	21 33	22 04	
09	314	45.6	23.6	91 31.3	9.6	4 09.7	11.5	59.5	54	03 39	04 26	05 04	20 44	21 10	21 39	22 12	
10	329	45.8	22.8	105 59.9	9.6	4 21.2	11.4	59.4	52	03 48	04 32	05 08	20 47	21 15	21 45	22 19	
11	344	46.0	21.9	120 28.5	9.6	4 32.6	11.4	59.4	50	03 56	04 37	05 12	20 49	21 18	21 50	22 26	
12	359	46.2	N 9 21.0	134 57.1	9.6	N 4 44.0	11.4	59.4	45	04 12	04 49	05 19	20 54	21 27	22 02	22 40	
13	14	46.4	20.1	149 25.7	9.7	4 55.4	11.3	59.3	N 40	04 24	04 57	05 25	20 58	21 34	22 12	22 52	
14	29	46.6	19.2	163 54.4	9.7	5 06.7	11.2	59.3	35	04 34	05 05	05 31	21 02	21 40	22 20	23 02	
15	44	46.8	18.3	178 23.1	9.7	5 17.9	11.2	59.3	30	04 42	05 11	05 36	21 05	21 46	22 27	23 11	
16	59	47.0	17.4	192 51.8	9.8	5 29.1	11.2	59.2	20	04 55	05 21	05 44	21 10	21 55	22 40	23 26	
17	74	47.1	16.5	207 20.6	9.8	5 40.3	11.1	59.2	N 10	05 05	05 30	05 51	21 15	22 03	22 51	23 39	
18	89	47.3	N 9 15.6	221 49.4	9.8	N 5 51.4	11.1	59.1	0	05 12	05 36	05 57	21 20	22 11	23 02	23 52	
19	104	47.5	14.7	236 18.2	9.8	6 02.5	11.0	59.1	S 10	05 18	05 43	06 04	21 25	22 19	23 13	24 05	
20	119	47.7	13.9	250 47.0	9.8	6 13.5	10.9	59.1	20	05 23	05 48	06 10	21 30	22 28	23 24	24 18	
21	134	47.9	13.0	265 15.8	9.9	6 24.4	11.0	59.0	30	05 26	05 54	06 18	21 36	22 38	23 37	24 34	
22	149	48.1	12.1	279 44.7	9.9	6 35.4	10.8	59.0	35	05 27	05 57	06 22	21 39	22 43	23 44	24 43	
23	164	48.3	11.2	294 13.6	9.9	6 46.2	10.8	58.9	40	05 28	06 00	06 27	21 43	22 50	23 53	24 53	
30 00	179	48.5	N 9 10.3	308 42.5	10.0	N 6 57.0	10.8	58.9	45	05 29	06 03	06 33	21 48	22 57	24 03	00 03	
01	194	48.7	09.4	323 11.5	9.9	7 07.8	10.7	58.9	S 50	05 29	06 06	06 39	21 53	23 06	24 15	00 15	
02	209	48.8	08.5	337 40.4	10.0	7 18.5	10.6	58.8	52	05 29	06 08	06 42	21 56	23 10	24 21	00 21	
03	224	49.0	07.6	352 09.4	10.0	7 29.1	10.6	58.8	54	05 29	06 10	06 46	21 59	23 15	24 27	00 27	
04	239	49.2	06.7	6 38.4	10.0	7 39.7	10.5	58.7	56	05 29	06 12	06 49	22 02	23 20	24 35	00 35	
05	254	49.4	05.8	21 07.4	10.1	7 50.2	10.5	58.7	58	05 28	06 13	06 53	22 05	23 26	24 43	00 43	
06	269	49.6	N 9 04.9	35 36.5	10.0	N 8 00.7	10.4	58.7	S 60	05 27	06 16	06 58	22 09	23 32	24 52	00 52	
07	284	49.8	04.0	50 05.5	10.1	8 11.1	10.3	58.6									
08	299	50.0	03.1	64 34.6	10.1	8 21.4	10.3	58.6	Lat.	Sun-set	Twilight	Moonset					
09	314	50.2	02.2	79 03.7	10.1	8 31.7	10.2	58.5			Civil	29	30	31	I		
10	329	50.4	01.4	93 32.8	10.2	8 41.9	10.2	58.5			Naut.						
11	344	50.6	9 00.5	108 02.0	10.1	8 52.1	10.1	58.5									
12	359	50.8	N 8 59.6	122 31.1	10.2	N 9 02.2	10.0	58.4	N 72	20 08	21 41	09 47	11 44	13 40	15 40		
13	14	50.9	58.7	137 00.3	10.2	9 12.2	10.0	58.4	N 70	19 53	21 10	09 41	11 29	13 15	14 59		
14	29	51.1	57.8	151 29.5	10.2	9 22.2	9.9	58.3	68	19 41	20 48	09 36	11 18	12 57	14 30		
15	44	51.3	56.9	165 58.7	10.2	9 32.1	9.8	58.3	66	19 32	20 31	09 32	11 09	12 42	14 09		
16	59	51.5	56.0	180 27.9	10.2	9 41.9	9.8	58.3	64	19 23	20 17	09 28	11 01	12 29	13 52		
17	74	51.7	55.1	194 57.1	10.3	9 51.7	9.7	58.2	62	19 16	20 06	09 25	10 55	12 19	13 38		
18	89	51.9	N 8 54.2	209 26.4	10.2	N 10 01.4	9.6	58.2	60	19 10	19 56	09 23	10 49	12 10	13 27		
19	104	52.1	53.3	223 55.6	10.3	10 11.0	9.6	58.1	N 58	19 05	19 47	09 20	10 44	12 03	13 17		
20	119	52.3	52.4	238 24.9	10.3	10 20.6	9.5	58.1	56	19 00	19 40	09 18	10 39	11 56	13 08		
21	134	52.5	51.5	252 54.2	10.3	10 30.1	9.4	58.1	54	18 56	19 33	09 17	10 35	11 50	13 00		
22	149	52.7	50.6	267 23.5	10.3	10 39.5	9.3	58.0	52	18 52	19 28	09 15	10 31	11 44	12 53		
23	164	52.9	49.7	281 52.8	10.4	10 48.8	9.3	58.0	50	18 49	19 23	09 13	10 28	11 40	12 47		
31 00	179	53.1	N 8 48.8	296 22.2	10.3	N 10 58.1	9.2	57.9	45	18 41	19 12	09 10	10 21	11 29	12 33		
01	194	53.2	47.9	310 51.5	10.4	11 07.3	9.1	57.9	N 40	18 35	19 03	09 07	10 15	11 20	12 22		
02	209	53.4	47.0	325 20.9	10.3	11 16.4	9.1	57.9	35	18 30	18 56	09 05	10 10	11 13	12 13		
03	224	53.6	46.1	339 50.2	10.4	11 25.5	9.0	57.8	30	18 25	18 50	09 03	10 06	11 06	12 05		
04	239	53.8	45.2	354 19.6	10.4	11 34.5	8.9	57.8	20	18 17	18 40	08 59	09 58	10 55	11 50		
05	254	54.0	44.3	8 49.0	10.4	11 43.4	8.8	57.7	N 10	18 10	18 32	08 56	09 51	10 45	11 38		
06	269	54.2	N 8 43.4	23 18.4	10.4	N 11 52.2	8.7	57.7	0	18 04	18 25	08 53	09 45	10 36	11 26		
07	284	54.4	42.5	37 47.8	10.5	12 00.9	8.7	57.7	S 10	17 58	18 19	08 50	09 38	10 26	11 14		
08	299	54.6	41.6	52 17.3	10.4	12 09.6	8.6	57.6	20	17 51	18 13	08 47	09 31	10 16	11 02		
09	314	54.8	40.7	66 46.7	10.4	12 18.2	8.5	57.6	30	17 44	18 08	08 43	09 24	10 05	10 48		
10	329	55.0	39.8	81 16.1	10.5	12 26.7	8.5	57.5	35	17 40	18 05	08 41	09 19	09 59	10 39		
11	344	55.2	38.9	95 45.6	10.5	12 35.2	8.3	57.5	40	17 35	18 02	08 39	09 14	09 51	10 30		
12	359	55.4	N 8 38.0	110 15.1	10.5	N 12 43.5	8.3	57.5	45	17 29	17 59	08 36	09 09	09 43	10 19		
13	14	55.6	37.1	124 44.6	10.4	12 51.8	8.2	57.4	S 50	17 23	17 56	08 32	09 02	09 32	10 06		
14	29	55.8	36.2	139 14.0	10.5	13 00.0	8.1	57.4	52	17 20	17 54	08 31	08 59	09 28	10 00		
15	44	56.0	35.3	153 43.5	10.6	13 08.1	8.1	57.4	54	17 17	17 52	08 29	08 55	09 22	09 53		
16	59	56.1	34.4	168 13.1	10.5	13 16.2	7.9	57.3	56	17 13	17 51	08 27	08 51	09 17	09 46		
17	74	56.3	33.5	182 42.6	10.5	13 24.1	7.9	57.3	58	17 09	17 49	08 25	08 47	09 10	09 37		
18	89	56.5	N 8 32.6	197 12.1	10.5	N 13 32.0	7.8	57.2	S 60	17 05	17 47	08 23	08 42	09 03	09 27		
19	104	56.7	31.7	211 41.6	10.6	13 39.8	7.7	57.2									
20	119	56.9	30.8	226 11.2	10.5	13 47.5	7.6	57.2	Day	SUN		MOON					
21	134	57.1	29.9	240 40.7	10.6	13 55.1	7.6	57.1									



G.M.T.		ARIES		VENUS -3.4		MARS +1.9		JUPITER -2.2		SATURN +0.5		STARS		
		G.H.A.		G.H.A.	Dec.	G.H.A.	Dec.	G.H.A.	Dec.	G.H.A.	Dec.	Name	S.H.A.	Dec.
F R I D A Y	00	339 55.0	214 51.4	N19 16.0	150 55.8	S 3 24.0	39 32.1	S21 11.4	44 11.5	S21 33.2	Acamar	315 47.9	S 40 27.3	
	01	354 57.5	229 50.8	15.4	165 56.8	24.6	54 34.8	11.4	59 14.1	33.2	Achernar	335 55.5	S 57 25.7	
	02	9 59.9	244 50.1	14.9	180 57.8	25.3	69 37.4	11.5	74 16.7	33.2	Acruz	173 53.7	S 62 53.2	
	03	25 02.4	259 49.5	14.3	195 58.7	25.9	84 40.1	11.5	89 19.3	33.3	Adhara	255 43.5	S 28 55.0	
	04	40 04.9	274 48.9	13.8	210 59.7	26.6	99 42.7	11.6	104 21.8	33.3	Aldebaran	291 34.4	N 16 25.9	
	05	55 07.3	289 48.3	13.3	226 00.7	27.3	114 45.3	11.6	119 24.4	33.3				
	06	70 09.8	304 47.7	N19 12.7	241 01.7	S 3 27.9	129 48.0	S21 11.6	134 27.0	S21 33.3	Alioth	166 55.5	N 56 10.4	
	07	85 12.2	319 47.0	12.2	256 02.7	28.6	144 50.6	11.7	149 29.5	33.3	Alkaid	153 30.1	N 49 30.6	
	08	100 14.7	334 46.4	11.6	271 03.7	29.2	159 53.3	11.7	164 32.1	33.4	Al Na'ir	28 32.4	S 47 08.8	
	09	115 17.2	349 45.8	11.1	286 04.6	29.9	174 55.9	11.7	179 34.7	33.4	Alnilam	276 26.2	S 1 13.5	
	10	130 19.6	4 45.2	10.5	301 05.6	30.6	189 58.6	11.8	194 37.3	33.4	Alphard	218 34.9	S 8 29.4	
	11	145 22.1	19 44.6	10.0	316 06.6	31.2	205 01.2	11.8	209 39.8	33.4				
	12	160 24.6	34 44.0	N19 09.4	331 07.6	S 3 31.9	220 03.9	S21 11.8	224 42.4	S21 33.4	Alphecca	126 44.3	N 26 50.9	
	13	175 27.0	49 43.3	08.9	346 08.6	32.5	235 06.5	11.9	239 45.0	33.5	Alpheratz	358 23.7	N 28 52.7	
	14	190 29.5	64 42.7	08.3	1 09.5	33.2	250 09.2	11.9	254 47.6	33.5	Altair	62 46.2	N 8 46.2	
	15	205 32.0	79 42.1	07.8	16 10.5	33.9	265 11.8	12.0	269 50.1	33.5	Ankaa	353 54.0	S 42 30.7	
	16	220 34.4	94 41.5	07.2	31 11.5	34.5	280 14.5	12.0	284 52.7	33.5	Antares	113 14.3	S 26 20.8	
	17	235 36.9	109 40.9	06.7	46 12.5	35.2	295 17.1	12.0	299 55.3	33.5				
	18	250 39.3	124 40.2	N19 06.1	61 13.5	S 3 35.8	310 19.7	S21 12.1	314 57.8	S21 33.6	Arcturus	146 31.7	N 19 23.2	
	19	265 41.8	139 39.6	05.6	76 14.4	36.5	325 22.4	12.1	330 00.4	33.6	Atria	108 51.3	S 68 57.7	
	20	280 44.3	154 39.0	05.0	91 15.4	37.2	340 25.0	12.1	345 03.0	33.6	Avior	234 34.5	S 59 23.0	
	21	295 46.7	169 38.4	04.4	106 16.4	37.8	355 27.7	12.2	0 05.5	33.6	Bellatrix	279 14.1	N 6 18.9	
	22	310 49.2	184 37.8	03.9	121 17.4	38.5	10 30.3	12.2	15 08.1	33.6	Betelgeuse	271 43.8	N 7 24.0	
	23	325 51.7	199 37.2	03.3	136 18.4	39.1	25 33.0	12.2	30 10.7	33.7				
S A T U R D A Y	00	340 54.1	214 36.5	N19 02.8	151 19.3	S 3 39.8	40 35.6	S21 12.3	45 13.3	S21 33.7	Canopus	264 13.8	S 52 40.3	
	01	355 56.6	229 35.9	02.2	166 20.3	40.5	55 38.2	12.3	60 15.8	33.7	Capella	281 32.4	N 45 57.4	
	02	10 59.1	244 35.3	01.6	181 21.3	41.1	70 40.9	12.3	75 18.4	33.7	Deneb	49 57.8	N 45 08.8	
	03	26 01.5	259 34.7	01.1	196 22.3	41.8	85 43.5	12.4	90 21.0	33.7	Denebola	183 13.9	N 14 47.4	
	04	41 04.0	274 34.1	19 00.5	211 23.3	42.4	100 46.2	12.4	105 23.5	33.8	Diphda	349 34.9	S 18 11.7	
	05	56 06.5	289 33.5	18 59.9	226 24.2	43.1	115 48.8	12.4	120 26.1	33.8				
	06	71 08.9	304 32.9	N18 59.4	241 25.2	S 3 43.8	130 51.5	S21 12.5	135 28.7	S21 33.8	Dubhe	194 40.4	N 61 57.6	
	07	86 11.4	319 32.2	58.8	256 26.2	44.4	145 54.1	12.5	150 31.2	33.8	Elmath	279 02.2	N 28 34.4	
	08	101 13.8	334 31.6	58.2	271 27.2	45.1	160 56.7	12.5	165 33.8	33.8	Eltanin	91 04.2	N 51 30.0	
	09	116 16.3	349 31.0	57.7	286 28.2	45.7	175 59.4	12.6	180 36.4	33.9	Enif	34 25.3	N 9 42.1	
	10	131 18.8	4 30.4	57.1	301 29.1	46.4	191 02.0	12.6	195 39.0	33.9	Fomalhaut	16 06.8	S 29 49.4	
	11	146 21.2	19 29.8	56.5	316 30.1	47.1	206 04.7	12.7	210 41.5	33.9				
	12	161 23.7	34 29.2	N18 56.0	331 31.1	S 3 47.7	221 07.3	S21 12.7	225 44.1	S21 33.9	Gacrux	172 45.0	S 56 53.9	
	13	176 26.2	49 28.6	55.4	346 32.1	48.4	236 09.9	12.7	240 46.7	33.9	Gienah	176 32.9	S 17 19.6	
	14	191 28.6	64 28.0	54.8	1 33.1	49.0	251 12.6	12.8	255 49.2	33.9	Hadar	149 43.9	S 60 11.4	
	15	206 31.1	79 27.3	54.2	16 34.0	49.7	266 15.2	12.8	270 51.8	34.0	Hamal	328 44.8	N 23 16.8	
	16	221 33.6	94 26.7	53.7	31 35.0	50.4	281 17.8	12.8	285 54.4	34.0	Kaus Aust.	84 35.6	S 34 24.2	
	17	236 36.0	109 26.1	53.1	46 36.0	51.0	296 20.5	12.9	300 56.9	34.0				
	18	251 38.5	124 25.5	N18 52.5	61 37.0	S 3 51.7	311 23.1	S21 12.9	315 59.5	S21 34.0	Kochab	137 18.9	N 74 19.2	
	19	266 41.0	139 24.9	51.9	76 38.0	52.3	326 25.8	12.9	331 02.1	34.0	Markab	14 17.0	N 15 00.0	
	20	281 43.4	154 24.3	51.3	91 38.9	53.0	341 28.4	13.0	346 04.6	34.1	Menkar	314 55.9	N 3 56.4	
	21	296 45.9	169 23.7	50.8	106 39.9	53.7	356 31.0	13.0	1 07.2	34.1	Menkent	148 54.0	S 36 10.9	
	22	311 48.3	184 23.1	50.2	121 40.9	54.3	11 33.7	13.0	16 09.8	34.1	Miaplacidus	221 48.8	S 69 33.4	
	23	326 50.8	199 22.4	49.6	136 41.9	55.0	26 36.3	13.1	31 12.3	34.1				
S U N D A Y	00	341 53.3	214 21.8	N18 49.0	151 42.8	S 3 55.6	41 38.9	S21 13.1	46 14.9	S21 34.1	Mirfak	309 36.3	N 49 43.3	
	01	356 55.7	229 21.2	48.4	166 43.8	56.3	56 41.6	13.1	61 17.5	34.2	Nunki	76 46.6	S 26 20.7	
	02	11 58.2	244 20.6	47.8	181 44.8	57.0	71 44.2	13.2	76 20.0	34.2	Peacock	54 20.4	S 56 51.6	
	03	27 00.7	259 20.0	47.3	196 45.8	57.6	86 46.8	13.2	91 22.6	34.2	Pollux	244 15.9	N 28 07.1	
	04	42 03.1	274 19.4	46.7	211 46.7	58.3	101 49.5	13.2	106 25.2	34.2	Procyon	245 41.0	N 5 19.5	
	05	57 05.6	289 18.8	46.1	226 47.7	58.9	116 52.1	13.3	121 27.7	34.2				
	06	72 08.1	304 18.2	N18 45.5	241 48.7	S 3 59.6	131 54.7	S21 13.3	136 30.3	S21 34.3	Rasalhague	96 42.7	N 12 35.5	
	07	87 10.5	319 17.6	44.9	256 49.7	4 00.3	146 57.4	13.3	151 32.9	34.3	Regulus	208 25.5	N 12 09.4	
	08	102 13.0	334 17.0	44.3	271 50.7	00.9	162 00.0	13.4	166 35.4	34.3	Rigel	281 49.8	S 8 14.6	
	09	117 15.5	349 16.4	43.7	286 51.6	01.6	177 02.6	13.4	181 38.0	34.3	Rigel Kent.	140 45.6	S 60 40.7	
	10	132 17.9	4 15.7	43.1	301 52.6	02.2	192 05.3	13.4	196 40.5	34.3	Sabik	102 57.4	S 15 40.6	
	11	147 20.4	19 15.1	42.5	316 53.6	02.9	207 07.9	13.5	211 43.1	34.4				
	12	162 22.8	34 14.5	N18 41.9	331 54.6	S 4 03.6	222 10.5	S21 13.5	226 45.7	S21 34.4	Schedar	350 24.7	N 56 19.5	
	13	177 25.3	49 13.9	41.3	346 55.5	04.2	237 13.2	13.5	241 48.2	34.4	Shaula	97 15.0	S 37 04.6	
	14	192 27.8	64 13.3	40.7	1 56.5	04.9	252 15.8	13.6	256 50.8	34.4	Sirius	259 08.5	S 16 39.6	
	15	207 30.2	79 12.7	40.1	16 57.5	05.5	267 18.4	13.6	271 53.4	34.4	Spica	159 12.8	S 10 57.5	
	16	222 32.7	94 12.1	39.5	31 58.5	06.2	282 21.0	13.6	286 55.9	34.5	Suhail	223 21.7	S 43 16.5	
	17	237 35.2	109 11.5	38.9	46 59.4	06.9	297 23.7	13.7	301 58.5	34.5				
	18	252 37.6	124 10.9	N18 38.3	62 00.4	S 4 07.5	312 26.3	S21 13.7	317 01.1	S21 34.5	Vega	81 05.3	N 38 45.2	
	19	267 40.1	139 10.3	37.7	77 01.4	08.2	327 28.9	13.7	332 03.6	34.5	Zuben'ubi	137 49.0	S 15 52.8	
	20	282 42.6	154 09.7	37.1	92 02.4	08.8	342 31.6	13.8	347 06.2	34.5				
	21	297 45.0	169 09.1	36.5	107 03.3	09.5	357 34.2	13.8	2 08.7	34.5				
	22	312 47.5	184 08.5	35.9	122 04.3	10.2	12 36.8	13.8	17 11.3	34.6	Venus	233 42.4	9 42	
	23	327 49.9	199 07.8	35.3	137 05.3	10.8	27 39.4	13.8	32 13.9	34.6	Mars	170 25.2	13 54	
Mer. Pass. 1 16.2		v -0.6 d 0.6		v 1.0 d 0.7		v 2.6 d 0.0		v 2.6 d 0.0		v 2.6 d 0.0		Jupiter		59 41.5 21 14
												Saturn		64 19.2 20 56

G.M.T.		SUN				MOON				Lat.	Twilight		Sun-rise	Moonrise							
		G.H.A.		Dec.	G.H.A.	<i>v</i>	Dec.	<i>d</i>	H.P.		Naut.	Civil		1	2	3	4				
d	h	°	'	°	'	°	'	°	'	°	'	h	m	h	m	h	m	h	m	h	m
FRI DAY	00	179	57.7	N 8	27.2	284	09.4	10.6	N14	17.5	7.3	57.0	N 72	///	02 36	04 05	19 27	□	□	□	
	01	194	57.9	26.3		298	39.0	10.6	14	24.8	7.2	57.0	N 70	///	03 03	04 18	20 09	20 16	20 36	21 27	
	02	209	58.1	25.4		313	08.6	10.6	14	32.0	7.1	56.9	68	01 38	03 23	04 29	20 38	20 57	21 28	22 19	
	03	224	58.3	24.5		327	38.2	10.6	14	39.1	7.1	56.9	66	02 14	03 39	04 37	21 00	21 24	22 01	22 51	
	04	239	58.5	23.6		342	07.8	10.7	14	46.2	6.9	56.9	64	02 39	03 52	04 45	21 17	21 46	22 24	23 15	
SAT DAY	05	254	58.7	22.7		356	37.5	10.6	14	53.1	6.9	56.8	62	02 58	04 03	04 51	21 32	22 03	22 43	23 33	
	06	269	58.9	N 8	21.8	11	07.1	10.6	N15	00.0	6.7	56.8	60	03 13	04 12	04 56	21 44	22 17	22 59	23 49	
	07	284	59.1	20.8		25	36.7	10.7	15	06.7	6.7	56.8	N 58	03 26	04 19	05 01	21 55	22 30	23 12	24 02	
	08	299	59.3	19.9		40	06.4	10.6	15	13.4	6.6	56.7	56	03 37	04 26	05 06	22 04	22 40	23 23	24 13	
	09	314	59.5	19.0		54	36.0	10.7	15	20.0	6.5	56.7	54	03 46	04 32	05 09	22 12	22 50	23 33	24 23	
SUN DAY	10	329	59.7	18.1		69	05.7	10.6	15	26.5	6.4	56.7	52	03 54	04 37	05 13	22 19	22 58	23 42	24 32	
	11	344	59.9	17.2		83	35.3	10.7	15	32.9	6.4	56.6	50	04 01	04 42	05 16	22 26	23 06	23 50	24 40	
	12	0	00.1	N 8	16.3	98	05.0	10.7	N15	39.3	6.2	56.6	45	04 16	04 52	05 23	22 40	23 22	24 07	00 07	
	13	15	00.3	15.4		112	34.7	10.7	15	45.5	6.2	56.5	N 40	04 27	05 01	05 28	22 52	23 35	24 21	00 21	
	14	30	00.5	14.5		127	04.4	10.7	15	51.7	6.0	56.5	35	04 37	05 07	05 33	23 02	23 46	24 33	00 33	
MON DAY	15	45	00.7	13.6		141	34.1	10.7	15	57.7	6.0	56.5	30	04 44	05 13	05 37	23 11	23 56	24 43	00 43	
	16	60	00.9	12.7		156	03.8	10.7	16	03.7	5.9	56.4	20	04 56	05 22	05 44	23 26	24 13	00 13	01 01	
	17	75	01.1	11.8		170	33.5	10.7	16	09.6	5.8	56.4	N 10	05 05	05 29	05 51	23 39	24 28	00 28	01 17	
	18	90	01.3	N 8	10.9	185	03.2	10.7	N16	15.4	5.7	56.4	0	05 11	05 35	05 56	23 52	24 42	00 42	01 31	
	19	105	01.4	10.0		199	32.9	10.8	16	21.1	5.6	56.3	S 10	05 16	05 41	06 02	24 05	00 05	00 56	01 46	
TUE SDAY	20	120	01.6	09.0		214	02.7	10.7	16	26.7	5.5	56.3	20	05 20	05 46	06 08	24 18	00 18	01 11	02 01	
	21	135	01.8	08.1		228	32.4	10.8	16	32.2	5.4	56.3	30	05 23	05 50	06 14	24 34	00 34	01 28	02 20	
	22	150	02.0	07.2		243	02.2	10.7	16	37.6	5.4	56.2	35	05 23	05 53	06 18	24 43	00 43	01 38	02 30	
	23	165	02.2	06.3		257	31.9	10.8	16	43.0	5.2	56.2	40	05 24	05 55	06 22	24 53	00 53	01 50	02 41	
	00	180	02.4	N 8	05.4	272	01.7	10.8	N16	48.2	5.2	56.2	45	05 24	05 58	06 27	00 03	01 05	02 03	02 56	
WED SDAY	01	195	02.6	04.5		286	31.5	10.7	16	53.4	5.0	56.1	S 50	05 23	06 00	06 33	00 15	01 20	02 20	03 13	
	02	210	02.8	03.6		301	01.2	10.8	16	58.4	5.0	56.1	52	05 23	06 02	06 36	00 21	01 27	02 27	03 21	
	03	225	03.0	02.7		315	31.0	10.8	17	03.4	4.9	56.1	54	05 22	06 03	06 38	00 27	01 35	02 36	03 30	
	04	240	03.2	01.8		330	00.8	10.8	17	08.3	4.8	56.0	56	05 21	06 04	06 42	00 35	01 44	02 46	03 40	
	05	255	03.4	8 00.9		344	30.6	10.8	17	13.1	4.6	56.0	58	05 20	06 06	06 45	00 43	01 54	02 57	03 52	
THUR SDAY	06	270	03.6	N 7	59.9	359	00.4	10.9	N17	17.7	4.6	56.0	S 60	05 19	06 07	06 49	00 52	02 05	03 10	04 05	
	07	285	03.8	59.0		13	30.3	10.8	17	22.3	4.5	56.0		Lat.	Sun-set	Twilight		Moonset			
	08	300	04.0	58.1		28	00.1	10.8	17	26.8	4.4	55.9			Civil	Naut.	1	2	3	4	
	09	315	04.2	57.2		42	29.9	10.9	17	31.2	4.4	55.9		°	h m	h m	h m	h m	h m	h m	h m
	10	330	04.4	56.3		56	59.8	10.9	17	35.6	4.2	55.9	N 72	19 51	21 18	///	15 40	□	□	□	
FRI DAY	11	345	04.6	55.4		71	29.7	10.8	17	39.8	4.1	55.8	N 70	19 39	20 52	23 22	14 59	16 36	17 59	18 49	
	12	0	04.8	N 7	54.5	85	59.5	10.9	N17	43.9	4.0	55.8	68	19 28	20 33	22 14	14 30	15 56	17 07	17 57	
	13	15	05.0	53.6		100	29.4	10.9	17	47.9	4.0	55.8	66	19 20	20 17	21 41	14 09	15 28	16 34	17 25	
	14	30	05.2	52.7		114	59.3	10.9	17	51.9	3.8	55.7	64	19 13	20 05	21 17	13 52	15 07	16 11	17 01	
	15	45	05.4	51.7		129	29.2	10.9	17	55.7	3.8	55.7	62	19 07	19 55	20 58	13 38	14 50	15 52	16 42	
SAT DAY	16	60	05.6	50.8		143	59.1	10.9	17	59.5	3.6	55.7	60	19 01	19 46	20 44	13 27	14 36	15 37	16 27	
	17	75	05.8	49.9		158	29.0	10.9	18	03.1	3.6	55.7	N 58	18 57	19 38	20 31	13 17	14 24	15 23	16 14	
	18	90	06.0	N 7	49.0	172	58.9	11.0	N18	06.7	3.5	55.6	56	18 53	19 32	20 21	13 08	14 14	15 12	16 02	
	19	105	06.2	48.1		187	28.9	10.9	18	10.2	3.3	55.6	54	18 49	19 26	20 12	13 00	14 05	15 02	15 52	
	20	120	06.4	47.2		201	58.8	11.0	18	13.5	3.3	55.6	52	18 46	19 21	20 04	12 53	13 57	14 54	15 43	
SUN DAY	21	135	06.6	46.3		216	28.8	11.0	18	16.8	3.2	55.5	50	18 42	19 16	19 57	12 47	13 49	14 46	15 35	
	22	150	06.8	45.3		230	58.8	11.0	18	20.0	3.1	55.5	45	18 36	19 06	19 42	12 33	13 33	14 29	15 18	
	23	165	07.0	44.4		245	28.8	11.0	18	23.1	3.0	55.5	N 40	18 31	18 58	19 31	12 22	13 21	14 15	15 05	
	00	180	07.2	N 7	43.5	259	58.8	11.0	N18	26.1	2.9	55.5	35	18 26	18 52	19 22	12 13	13 10	14 03	14 53	
	01	195	07.4	42.6		274	28.8	11.0	18	29.0	2.8	55.4	30	18 22	18 46	19 14	12 05	13 00	13 53	14 43	
MON DAY	02	210	07.6	41.7		288	58.8	11.0	18	31.8	2.7	55.4	20	18 15	18 37	19 03	11 50	12 44	13 36	14 25	
	03	225	07.9	40.8		303	28.8	11.1	18	34.5	2.6	55.4	N 10	18 09	18 30	18 54	11 38	12 30	13 20	14 09	
	04	240	08.1	39.9		317	58.9	11.0	18	37.1	2.5	55.4	0	18 03	18 24	18 48	11 26	12 16	13 06	13 55	
	05	255	08.3	38.9		332	28.9	11.1	18	39.6	2.5	55.3	S 10	17 57	18 19	18 43	11 14	12 03	12 51	13 40	
	06	270	08.5	N 7	38.0	346	59.0	11.1	N18	42.1	2.3	55.3	20	17 52	18 14	18 40	11 02	11 48	12 36	13 24	
TUE SDAY	07	285	08.7	37.1		1	29.1	11.1	18	44.4	2.2	55.3	30	17 45	18 09	18 37	10 48	11 32	12 18	13 07	
	08	300	08.9	36.2		15	59.2	11.1	18	46.6	2.2	55.3	35	17 42	18 07	18 37	10 39	11 23	12 08	12 56	
	09	315	09.1	35.3		30	29.3	11.1	18	48.8	2.0	55.2	40	17 38	18 05	18 36	10 30	11 12	11 57	12 44	
	10	330	09.3	34.4		44	59.4	11.1	18	50.8	2.0	55.2	45	17 33	18 02	18 36	10 19	10 59	11 43	12 30	
	11	345	09.5	33.4		59	29.5	11.2	18	52.8	1.8	55.2	S 50	17 27	18 00	18 37	10 06	10 44	11 26	12 13	
WED SDAY	12	0	09.7	N 7	32.5	73	59.7	11.2	N18	54.6	1.8	55.2	52	17 25	17 59	18 38	10 00	10 36	11 18	12 05	
	13	15	09.9	31.6		88															

G.M.T.	ARIES		VENUS -3.4		MARS +1.9		JUPITER -2.2		SATURN +0.5		STARS		
	G.H.A.	Dec.	G.H.A.	Dec.	G.H.A.	Dec.	G.H.A.	Dec.	G.H.A.	Dec.	Name	S.H.A.	Dec.
d h	° ' "	° ' "	° ' "	° ' "	° ' "	° ' "	° ' "	° ' "	° ' "	° ' "		° ' "	° ' "
MONDAY	4 00	342 52.4	214 07.2 N18 34.7	152 06.3 S 4 11.5	42 42.1 S21 13.9	47 16.4 S21 34.6	Acamar	315 47.9	S 40 27.3				
	01	357 54.9	229 06.6 34.1	167 07.2 12.1	57 44.7 13.9	62 19.0 34.6	Achernar	335 55.5	S 57 25.7				
	02	12 57.3	244 06.0 33.5	182 08.2 12.8	72 47.3 13.9	77 21.6 34.6	Acruz	173 53.7	S 62 53.2				
	03	27 59.8	259 05.4 .. 32.9	197 09.2 .. 13.4	87 50.0 .. 14.0	92 24.1 .. 34.7	Adhara	255 43.5	S 28 55.0				
	04	43 02.3	274 04.8 32.3	212 10.2 14.1	102 52.6 14.0	107 26.7 34.7	Aldebaran	291 34.3	N 16 25.9				
	05	58 04.7	289 04.2 31.7	227 11.1 14.8	117 55.2 14.0	122 29.2 34.7							
	06	73 07.2	304 03.6 N18 31.1	242 12.1 S 4 15.4	132 57.8 S21 14.1	137 31.8 S21 34.7	Alioth	166 55.5	N 56 10.3				
	07	88 09.7	319 03.0 30.5	257 13.1 16.1	148 00.5 14.1	152 34.4 34.7	Alkaid	153 30.1	N 49 30.6				
	08	103 12.1	334 02.4 29.9	272 14.0 16.7	163 03.1 14.1	167 36.9 34.8	Al Na'ir	28 32.4	S 47 08.8				
	09	118 14.6	349 01.8 .. 29.2	287 15.0 .. 17.4	178 05.7 .. 14.2	182 39.5 .. 34.8	Alnilam	276 26.2	S 1 13.5				
	10	133 17.1	4 01.2 28.6	302 16.0 18.1	193 08.3 14.2	197 42.0 34.8	Alphard	218 34.9	S 8 29.4				
	11	148 19.5	19 00.6 28.0	317 17.0 18.7	208 11.0 14.2	212 44.6 34.8							
	12	163 22.0	34 00.0 N18 27.4	332 17.9 S 4 19.4	223 13.6 S21 14.3	227 47.2 S21 34.8	Alphecca	126 44.3	N 26 50.9				
	13	178 24.4	48 59.4 26.8	347 18.9 20.0	238 16.2 14.3	242 49.7 34.9	Alpheratz	358 23.7	N 28 52.7				
	14	193 26.9	63 58.8 26.2	2 19.9 20.7	253 18.8 14.3	257 52.3 34.9	Altair	62 46.2	N 8 46.2				
	15	208 29.4	78 58.2 .. 25.5	17 20.9 .. 21.4	268 21.4 .. 14.4	272 54.9 .. 34.9	Ankaa	353 53.9	S 42 30.7				
	16	223 31.8	93 57.6 24.9	32 21.8 22.0	283 24.1 14.4	287 57.4 34.9	Antares	113 14.4	S 26 20.8				
	17	238 34.3	108 57.0 24.3	47 22.8 22.7	298 26.7 14.4	303 00.0 34.9							
	18	253 36.8	123 56.4 N18 23.7	62 23.8 S 4 23.3	313 29.3 S21 14.5	318 02.5 S21 34.9	Arcturus	146 31.7	N 19 23.2				
	19	268 39.2	138 55.8 23.0	77 24.7 24.0	328 31.9 14.5	333 05.1 35.0	Atria	108 51.3	S 68 57.7				
	20	283 41.7	153 55.2 22.4	92 25.7 24.7	343 34.6 14.5	348 07.7 35.0	Avior	234 34.5	S 59 20.3				
	21	298 44.2	168 54.6 .. 21.8	107 26.7 .. 25.3	358 37.2 .. 14.5	3 10.2 .. 35.0	Bellatrix	279 14.1	N 6 18.9				
	22	313 46.6	183 54.0 21.2	122 27.6 26.0	13 39.8 14.6	18 12.8 35.0	Betelgeuse	271 43.8	N 7 24.0				
	23	328 49.1	198 53.4 20.5	137 28.6 26.6	28 42.0 14.6	33 15.3 35.0							
TUESDAY	5 00	343 51.6	213 52.8 N18 19.9	152 29.6 S 4 27.3	43 45.0 S21 14.6	48 17.9 S21 35.1	Canopus	264 13.8	S 52 40.2				
	01	358 54.0	228 52.2 19.3	167 30.6 28.0	58 47.7 14.7	63 20.4 35.1	Capella	281 32.4	N 45 57.4				
	02	13 56.5	243 51.6 18.7	182 31.5 28.6	73 50.3 14.7	78 23.0 35.1	Deneb	49 57.8	N 45 08.8				
	03	28 58.9	258 51.0 .. 18.0	197 32.5 .. 29.3	88 52.9 .. 14.7	93 25.6 .. 35.1	Denebola	183 13.9	N 14 47.4				
	04	44 01.4	273 50.4 17.4	212 33.5 29.9	103 55.5 14.8	108 28.1 35.1	Diphda	349 34.9	S 18 11.7				
	05	59 03.9	288 49.8 16.8	227 34.4 30.6	118 58.1 14.8	123 30.7 35.1							
	06	74 06.3	303 49.2 N18 16.1	242 35.4 S 4 31.3	134 00.8 S21 14.8	138 33.2 S21 35.2	Dubhe	194 40.4	N 61 57.6				
	07	89 08.8	318 48.6 15.5	257 36.4 31.9	149 03.4 14.9	153 35.8 35.2	El Nath	279 02.2	N 28 34.4				
	08	104 11.3	333 48.0 14.9	272 37.3 32.6	164 06.0 14.9	168 38.4 35.2	Eltanin	91 04.2	N 51 30.0				
	09	119 13.7	348 47.4 .. 14.2	287 38.3 .. 33.2	179 08.6 .. 14.9	183 40.9 .. 35.2	Enif	34 25.3	N 9 42.1				
	10	134 16.2	3 46.8 13.6	302 39.3 33.9	194 11.2 14.9	198 43.5 35.2	Fomalhaut	16 06.8	S 29 49.4				
	11	149 18.7	18 46.2 13.0	317 40.3 34.5	209 13.8 15.0	213 46.0 35.3							
	12	164 21.1	33 45.6 N18 12.3	332 41.2 S 4 35.2	224 16.5 S21 15.0	228 48.6 S21 35.3	Gacrux	172 45.1	S 56 53.9				
	13	179 23.6	48 45.0 11.7	347 42.2 35.9	239 19.1 15.0	243 51.1 35.3	Gienah	176 32.9	S 17 19.6				
	14	194 26.0	63 44.4 11.0	2 43.2 36.5	254 21.7 15.1	258 53.7 35.3	Hadar	149 43.9	S 60 11.4				
	15	209 28.5	78 43.8 .. 10.4	17 44.1 .. 37.2	269 24.3 .. 15.1	273 56.3 .. 35.3	Hamal	328 44.8	N 23 16.8				
	16	224 31.0	93 43.2 09.8	32 45.1 37.8	284 26.9 15.1	288 58.8 35.3	Kaus Aust.	84 35.6	S 34 24.2				
	17	239 33.4	108 42.6 09.1	47 46.1 38.5	299 29.5 15.1	304 01.4 35.4							
	18	254 35.9	123 42.0 N18 08.5	62 47.0 S 4 39.2	314 32.1 S21 15.2	319 03.9 S21 35.4	Kochab	137 18.9	N 74 19.2				
	19	269 38.4	138 41.4 07.8	77 48.0 39.8	329 34.8 15.2	334 06.5 35.4	Markab	14 17.0	N 15 00.0				
	20	284 40.8	153 40.8 07.2	92 49.0 40.5	344 37.4 15.2	349 09.0 35.4	Menkar	314 55.9	N 3 56.4				
	21	299 43.3	168 40.2 .. 06.5	107 49.9 .. 41.1	359 40.0 .. 15.3	4 11.6 .. 35.4	Menkent	148 54.1	S 36 10.9				
	22	314 45.8	183 39.6 05.9	122 50.9 41.8	14 42.6 15.3	19 14.1 35.4	Miaplacidus	221 48.8	S 69 33.4				
	23	329 48.2	198 39.0 05.2	137 51.9 42.5	29 45.2 15.3	34 16.7 35.5							
WEDNESDAY	6 00	344 50.7	213 38.4 N18 04.6	152 52.8 S 4 43.1	44 47.8 S21 15.3	49 19.3 S21 35.5	Mirfak	309 36.3	N 49 43.3				
	01	359 53.2	228 37.8 03.9	167 53.8 43.8	59 50.4 15.4	64 21.8 35.5	Nunki	76 46.7	S 26 20.7				
	02	14 55.6	243 37.2 03.3	182 54.8 44.4	74 53.0 15.4	79 24.4 35.5	Peacock	54 20.4	S 56 51.6				
	03	29 58.1	258 36.6 .. 02.6	197 55.7 .. 45.1	89 55.6 .. 15.4	94 26.9 .. 35.5	Pollux	244 15.9	N 28 07.1				
	04	45 00.5	273 36.0 02.0	212 56.7 45.8	104 58.3 15.5	109 29.5 35.6	Procyon	245 40.9	N 5 19.5				
	05	60 03.0	288 35.4 01.3	227 57.7 46.4	120 00.9 15.5	124 32.0 35.6							
	06	75 05.5	303 34.9 N18 00.7	242 58.6 S 4 47.1	135 03.5 S21 15.5	139 34.6 S21 35.6	Rasalhague	96 42.7	N 12 35.5				
	07	90 07.9	318 34.3 18 00.0	257 59.6 47.7	150 06.1 15.5	154 37.1 35.6	Regulus	208 25.5	N 12 09.4				
	08	105 10.4	333 33.7 17 59.4	273 00.6 48.4	165 08.7 15.6	169 39.7 35.6	Rigel	281 49.7	S 8 14.6				
	09	120 12.9	348 33.1 .. 58.7	288 01.5 .. 49.0	180 11.3 .. 15.6	184 42.2 .. 35.6	Rigel Kent.	140 45.6	S 60 40.7				
	10	135 15.3	3 32.5 58.1	303 02.5 49.7	195 13.9 15.6	199 44.8 35.7	Sabik	102 57.5	S 15 40.6				
	11	150 17.8	18 31.9 57.4	318 03.5 50.4	210 16.5 15.7	214 47.4 35.7							
	12	165 20.3	33 31.3 N17 56.7	333 04.4 S 4 51.0	225 19.1 S21 15.7	229 49.9 S21 35.7	Schedar	350 24.7	N 56 19.5				
	13	180 22.7	48 30.7 56.1	343 05.4 51.7	240 21.7 15.7	244 52.5 35.7	Shaula	97 15.0	S 37 04.6				
	14	195 25.2	63 30.1 55.4	3 06.4 52.3	255 24.3 15.7	259 55.0 35.7	Sirius	259 08.4	S 16 39.6				
	15	210 27.7	78 29.5 .. 54.8	18 07.3 .. 53.0	270 27.0 .. 15.8	274 57.6 .. 35.7	Spica	159 12.8	S 10 57.5				
	16	225 30.1	93 28.9 54.1	33 08.3 53.7	285 29.6 15.8	290 00.1 35.8	Suhail	223 21.6	S 43 16.5				
	17	240 32.6	108 28.3 53.4	48 09.3 54.3	300 32.2 15.8	305 02.7 35.8							
	18	255 35.0	123 27.8 N17 52.8	63 10.2 S 4 55.0	315 34.8 S21 15.9	320 05.2 S21 35.8	Vega	81 05.3	N 38 45.2				
	19	270 37.5	138 27.2 52.1	78 11.2 55.6	330 37.4 15.9	335 07.8 35.8	Zuben'ubi	137 49.0	S 15 52.8				
	20	285 40.0	153 26.6 51.4	93 12.2 56.3	345 40.0 15.9	350 10.3 35.8							
	21	300 42.4	168 26.0 .. 50.8	108 13.1 .. 56.9	0 42.6 .. 15.9	5 12.9 .. 35.8							
	22	315 44.9	183 25.4 50.1	123 14.1 57.6	15 45.2 16.0	20 15.4 35.9	Venus	230 01.2	9 45				
	23	330 47.4	198 24.8 49.4	138 15.0 58.3	30 47.8 16.0	35 18.0 35.9	Mars	168 38.0	13 49				
Mer. Pass. 1 04.4		v -0.6 d 0.6		v 1.0 d 0.7		v 2.6 d 0.0		v 2.6 d 0.0		Jupiter			59 53.4 21 01
										Saturn			64 26.3 20 43

G.M.T.	SUN				MOON				Lat.	Twilight		Sun-rise	Moonrise						
	G.H.A.		Dec.	H.P.	G.H.A.		v	Dec.		d	Naut.		Civil	4	5	6	7		
	d	h			d	m												d	m
MONDAY	00	180	12-1	N 7 21-5	248	02-8	11-3	N19 09-6	0-6	54-9	N 72	01 13	03 19	04 31	21 27	22 47	24 17	00 17	
	01	195	12-3	20-6	262	33-1	11-4	19 10-2	0-6	54-9	68	02 01	03 37	04 40	22 19	23 27	24 46	00 46	
	02	210	12-5	19-7	277	03-5	11-4	19 10-8	0-4	54-8	66	02 31	03 50	04 47	22 51	23 55	25 08	01 08	
	03	225	12-7	18-7	291	33-9	11-4	19 11-2	0-4	54-8	64	02 52	04 02	04 53	23 15	24 16	00 16	01 25	
	04	240	12-9	17-8	306	04-3	11-5	19 11-6	0-2	54-8	62	03 09	04 11	04 59	23 33	24 33	00 33	01 39	
	05	255	13-1	16-9	320	34-8	11-4	19 11-8	0-2	54-8	60	03 23	04 19	05 04	23 49	24 47	00 47	01 51	
	06	270	13-3	N 7 16-0	335	05-2	11-5	N19 12-0	0-1	54-8	N 58	03 34	04 26	05 08	24 02	00 02	00 59	02 01	
	07	285	13-5	15-0	349	35-7	11-5	19 12-1	0-0	54-7	56	03 44	04 33	05 11	24 13	00 13	01 09	02 10	
	08	300	13-7	14-1	4 06-2	11-5	19 12-1	0-2	54-7	54	03 53	04 38	05 15	24 23	00 23	01 18	02 18		
	09	315	13-9	13-2	18 36-7	11-6	19 11-9	0-2	54-7	52	04 00	04 43	05 18	24 32	00 32	01 27	02 25		
	10	330	14-2	12-3	33 07-3	11-5	19 11-7	0-2	54-7	50	04 07	04 47	05 20	24 40	00 40	01 34	02 32		
	11	345	14-4	11-4	47 37-8	11-6	19 11-5	0-4	54-7	45	04 20	04 56	05 26	00 07	00 57	01 50	02 45		
	12	0 14-6	N 7 10-4	62 08-4	11-6	N19 11-1	0-5	54-7	N 40	04 31	05 04	05 31	00 21	01 11	02 03	02 57			
	13	15 14-8	09-5	76 39-0	11-6	19 10-6	0-6	54-6	35	04 39	05 10	05 35	00 33	01 22	02 14	03 06			
	14	30 15-0	08-6	91 09-6	11-7	19 10-0	0-6	54-6	30	04 46	05 15	05 39	00 43	01 32	02 23	03 14			
	15	45 15-2	07-7	105 40-3	11-6	19 09-4	0-8	54-6	20	04 57	05 23	05 45	01 01	01 50	02 39	03 29			
	16	60 15-4	06-7	120 10-9	11-7	19 08-6	0-8	54-6	N 10	05 05	05 29	05 51	01 17	02 05	02 54	03 42			
	17	75 15-6	05-8	134 41-6	11-7	19 07-8	0-9	54-6	0	05 10	05 34	05 55	01 31	02 20	03 07	03 54			
	18	90 15-8	N 7 04-9	149 12-3	11-8	N19 06-9	1-1	54-6	S 10	05 15	05 39	06 00	01 46	02 34	03 21	04 05			
	19	105 16-0	04-0	163 43-1	11-7	19 05-8	1-1	54-5	20	05 18	05 43	06 05	02 01	02 50	03 35	04 18			
	20	120 16-2	03-0	178 13-8	11-8	19 04-7	1-2	54-5	30	05 19	05 47	06 11	02 20	03 07	03 51	04 33			
	21	135 16-4	02-1	192 44-6	11-8	19 03-5	1-3	54-5	35	05 19	05 49	06 14	02 30	03 17	04 01	04 41			
	22	150 16-6	01-2	207 15-4	11-8	19 02-2	1-3	54-5	40	05 19	05 50	06 18	02 41	03 29	04 11	04 50			
	23	165 16-8	7 00-3	221 46-2	11-9	19 00-9	1-5	54-5	45	05 18	05 52	06 22	02 56	03 43	04 24	05 01			
TUESDAY	00	180	17-0	N 6 59-4	236 17-1	11-9	N18 59-4	1-6	54-5	S 50	05 17	05 54	06 27	03 13	03 59	04 40	05 14		
	01	195	17-2	58-4	250 48-0	11-9	18 57-8	1-6	54-4	52	05 16	05 55	06 29	03 21	04 07	04 47	05 21		
	02	210	17-5	57-5	265 18-9	11-9	18 56-2	1-7	54-4	54	05 15	05 56	06 31	03 30	04 16	04 55	05 27		
	03	225	17-7	56-6	279 49-8	11-9	18 54-5	1-9	54-4	56	05 14	05 57	06 34	03 40	04 26	05 04	05 35		
	04	240	17-9	55-6	294 20-7	12-0	18 52-6	1-9	54-4	58	05 12	05 58	06 37	03 52	04 37	05 14	05 44		
	05	255	18-1	54-7	308 51-7	12-0	18 50-7	2-0	54-4	S 60	05 10	05 59	06 40	04 05	04 50	05 26	05 54		
	06	270	18-3	N 6 53-8	323 22-7	12-0	N18 48-7	2-1	54-4	Lat.		Sun-set		Twilight		Moonset			
	07	285	18-5	52-9	337 53-7	12-1	18 46-6	2-1	54-4	Naut.	Civil	Naut.	4	5	6	7			
	08	300	18-7	51-9	352 24-8	12-1	18 44-5	2-3	54-4										
	09	315	18-9	51-0	6 55-9	12-1	18 42-2	2-3	54-3	N 72	19 35	20 56	22 33	18 49	19 08	19 15	19 16		
	10	330	19-1	50-1	21 27-0	12-1	18 39-9	2-5	54-3										
	11	345	19-3	49-2	35 58-1	12-1	18 37-4	2-5	54-3	N 70	19 35	20 56	22 33	18 49	19 08	19 15	19 16		
	12	0 19-5	N 6 48-2	50 29-2	12-2	N18 34-9	2-6	54-3	N 70	19 24	20 34	22 33	18 49	19 08	19 15	19 16			
	13	15 19-7	47-3	65 00-4	12-2	18 32-3	2-6	54-3	68	19 15	20 18	21 50	17 57	18 28	18 45	18 56			
	14	30 19-9	46-4	79 31-6	12-3	18 29-7	2-8	54-3	66	19 08	20 04	21 22	17 25	18 00	18 23	18 39			
	15	45 20-1	45-4	94 02-9	12-2	18 26-9	2-9	54-3	64	19 02	19 53	21 02	17 01	17 39	18 06	18 25			
	16	60 20-4	44-5	108 34-1	12-3	18 24-0	2-9	54-3	62	18 57	19 44	20 45	16 42	17 21	17 51	18 13			
	17	75 20-6	43-6	123 05-4	12-3	18 21-1	3-0	54-2	60	18 52	19 36	20 32	16 27	17 07	17 39	18 04			
	18	90 20-8	N 6 42-7	137 36-7	12-4	N18 18-1	3-1	54-2	N 58	18 48	19 29	20 21	16 14	16 55	17 28	17 55			
	19	105 21-0	41-7	152 08-1	12-3	18 15-0	3-2	54-2	56	18 45	19 23	20 11	16 02	16 44	17 19	17 47			
	20	120 21-2	40-8	166 39-4	12-4	18 11-8	3-3	54-2	54	18 42	19 18	20 03	15 52	16 35	17 10	17 41			
	21	135 21-4	39-9	181 10-8	12-5	18 08-5	3-3	54-2	52	18 39	19 13	19 56	15 43	16 26	17 03	17 34			
	22	150 21-6	38-9	195 42-3	12-4	18 05-2	3-5	54-2	50	18 36	19 09	19 49	15 35	16 19	16 57	17 29			
	23	165 21-8	38-0	210 13-7	12-5	18 01-7	3-5	54-2	45	18 30	19 00	19 36	15 18	16 03	16 42	17 17			
WEDNESDAY	00	180	22-0	N 6 37-1	224 45-2	12-5	N17 58-2	3-6	54-2	N 40	18 26	18 53	19 26	15 05	15 50	16 30	17 07		
	01	195	22-2	36-2	239 16-7	12-5	17 54-6	3-7	54-2	35	18 22	18 47	19 17	14 53	15 38	16 20	16 58		
	02	210	22-4	35-2	253 48-2	12-6	17 50-9	3-7	54-2	30	18 18	18 42	19 11	14 43	15 29	16 12	16 51		
	03	225	22-6	34-3	268 19-8	12-6	17 47-2	3-9	54-2	20	18 12	18 34	19 00	14 25	15 12	15 56	16 38		
	04	240	22-8	33-4	282 51-4	12-6	17 43-3	3-9	54-1	N 10	18 07	18 28	18 53	14 09	14 57	15 43	16 26		
	05	255	23-1	32-4	297 23-0	12-7	17 39-4	4-0	54-1	0	18 02	18 23	18 47	13 55	14 43	15 30	16 16		
	06	270	23-3	N 6 31-5	311 54-7	12-7	N17 35-4	4-0	54-1	S 10	17 57	18 18	18 43	13 40	14 29	15 17	16 05		
	07	285	23-5	30-6	326 26-4	12-7	17 31-4	4-2	54-1	20	17 52	18 15	18 40	13 24	14 14	15 03	15 53		
	08	300	23-7	29-6	340 58-1	12-7	17 27-2	4-2	54-1	30	17 47	18 11	18 39	13 07	13 57	14 48	15 39		
	09	315	23-9	28-7	355 29-8	12-8	17 23-0	4-3	54-1	35	17 44	18 09	18 39	12 56	13 47	14 39	15 32		
	10	330	24-1	27-8	10 01-6	12-8	17 18-7	4-4	54-1	40	17 40	18 08	18 39	12 44	13 35	14 28	15 23		
	11	345	24-3	26-8	24 33-4	12-8	17 14-3	4-5	54-1	45	17 36	18 06	18 40	12 30	13 22	14 16	15 13		
	12	0 24-5	N 6 25-9	39 05-2	12-9	N17 09-8	4-5	54-1	S 50	17 32	18 04	18 41	12 13	13 05	14 01	15 00			
	13	15 24-7	25-0	53 37-1	12-9	17 05-3	4-6	54-1	52	17 30	18 03	18 42	12 05	12 58	13 54	14 54			
	14	30 24-9	24-1	68 09-0	12-9	17 00-7	4-7	54-1	54	17 27	18 03	18 44	11 56	12 49	13 46	14 48			
	15	45 25-1	23-1	82 40-9	13-0	16 56-0	4-8	54-1	56	17 25	18 02	18 45	11 46	12 39	13 38	14 40			
	16	60 25-4	22-2	97 12-9	12-9	16 51-2	4-8	54-1	58	17 22	18 01	18 46	11 34	12 28	13 28	14 32			
	17	75 25-6	21-3	111 44-8	13-0	16 46-4	4-9	54-1	S 60	17 18	18 00	18 48	11 21	12 15	13 17	14 23			
	18	90 25-8	N 6 20-3	126 16-8	13-1	N16 41-5	5-0	54-0	Day		SUN		Mer. Pass.		MOON				

G.M.T.		ARIES		VENUS -3.4		MARS +1.9		JUPITER -2.2		SATURN +0.6		STARS		
		G.H.A.		G.H.A.	Dec.	G.H.A.	Dec.	G.H.A.	Dec.	G.H.A.	Dec.	Name	S.H.A.	Dec.
T H U R S D A Y	d	h												
	00	345 49.8	213 24.2	N17 48.7	153 16.0	S 4 58.9	45 50.4	S21 16.0	50 20.5	S21 35.9	Acamar	315 47.9	S 40 27.3	
	01	0 52.3	228 23.6	48.1	168 17.0	4 59.6	60 53.0	16.1	65 23.1	35.9	Achernar	335 55.5	S 57 25.7	
	02	15 54.8	243 23.0	47.4	183 17.9	5 00.2	75 55.6	16.1	80 25.6	35.9	Acrux	173 53.7	S 62 53.2	
	03	30 57.2	258 22.4	46.7	198 18.9	00.9	90 58.2	16.1	95 28.2	35.9	Adhara	255 43.5	S 28 55.0	
	04	45 59.7	273 21.9	46.1	213 19.9	01.6	106 00.8	16.1	110 30.7	36.0	Aldebaran	291 34.3	N 16 25.9	
	05	61 02.2	288 21.3	45.4	228 20.8	02.2	121 03.4	16.2	125 33.3	36.0				
	06	76 04.6	303 20.7	N17 44.7	243 21.8	S 5 02.9	136 06.0	S21 16.2	140 35.8	S21 36.0	Alioth	166 55.6	N 56 10.3	
	07	91 07.1	318 20.1	44.0	258 22.8	03.5	151 08.6	16.2	155 38.4	36.0	Alkaid	153 30.1	N 49 30.6	
	08	106 09.5	333 19.5	43.3	273 23.7	04.2	166 11.2	16.2	170 40.9	36.0	Al Na'ir	28 32.4	S 47 08.8	
	09	121 12.0	348 18.9	42.7	288 24.7	04.8	181 13.8	16.3	185 43.5	36.0	Alnilam	276 26.2	S 1 13.5	
	10	136 14.5	3 18.3	42.0	303 25.6	05.5	196 16.4	16.3	200 46.0	36.1	Alphard	218 34.9	S 8 29.4	
	11	151 16.9	18 17.8	41.3	318 26.6	06.2	211 19.0	16.3	215 48.6	36.1				
	12	166 19.4	33 17.2	N17 40.6	333 27.6	S 5 06.8	226 21.6	S21 16.3	230 51.1	S21 36.1	Alphecca	126 44.3	N 26 50.9	
	13	181 21.9	48 16.6	39.9	348 28.5	07.5	241 24.2	16.4	245 53.7	36.1	Alpheratz	358 23.7	N 28 52.7	
	14	196 24.3	63 16.0	39.3	3 29.5	08.1	256 26.8	16.4	260 56.2	36.1	Altair	62 46.2	N 8 46.2	
	15	211 26.8	78 15.4	38.6	18 30.5	08.8	271 29.4	16.4	275 58.8	36.1	Ankaa	353 53.9	S 42 30.7	
	16	226 29.3	93 14.8	37.9	33 31.4	09.5	286 32.0	16.5	291 01.3	36.2	Antares	113 14.4	S 26 20.8	
	17	241 31.7	108 14.2	37.2	48 32.4	10.1	301 34.6	16.5	306 03.9	36.2				
	18	256 34.2	123 13.7	N17 36.5	63 33.3	S 5 10.8	316 37.2	S21 16.5	321 06.4	S21 36.2	Arcturus	146 31.7	N 19 23.2	
	19	271 36.6	138 13.1	35.8	78 34.3	11.4	331 39.8	16.5	336 09.0	36.2	Atria	108 51.4	S 68 57.7	
	20	286 39.1	153 12.5	35.1	93 35.3	12.1	346 42.4	16.6	351 11.5	36.2	Avior	234 34.5	S 59 23.0	
	21	301 41.6	168 11.9	34.5	108 36.2	12.7	1 45.0	16.6	6 14.1	36.2	Bellatrix	279 14.1	N 6 18.9	
22	316 44.0	183 11.3	33.8	123 37.2	13.4	16 47.6	16.6	21 16.6	36.3	Betelgeuse	271 43.8	N 7 24.0		
23	331 46.5	198 10.7	33.1	138 38.1	14.1	31 50.2	16.6	36 19.2	36.3					
F R I D A Y	8 00	346 49.0	213 10.1	N17 32.4	153 39.1	S 5 14.7	46 52.8	S21 16.7	51 21.7	S21 36.3	Canopus	264 13.7	S 52 40.2	
	01	1 51.4	228 09.6	31.7	168 40.1	15.4	61 55.4	16.7	66 24.3	36.3	Capella	281 32.4	N 45 57.4	
	02	16 53.9	243 09.0	31.0	183 41.0	16.0	76 58.0	16.7	81 26.8	36.3	Deneb	49 57.8	N 45 08.8	
	03	31 56.4	258 08.4	30.3	198 42.0	16.7	92 00.6	16.7	96 29.3	36.3	Denebola	183 13.9	N 14 47.4	
	04	46 58.8	273 07.8	29.6	213 43.0	17.3	107 03.2	16.8	111 31.9	36.4	Diphda	349 34.9	S 18 11.7	
	05	62 01.3	288 07.2	28.9	228 43.9	18.0	122 05.8	16.8	126 34.4	36.4				
	06	77 03.8	303 06.7	N17 28.2	243 44.9	S 5 18.7	137 08.4	S21 16.8	141 37.0	S21 36.4	Dubhe	194 40.4	N 61 57.6	
	07	92 06.2	318 06.1	27.5	258 45.8	19.3	152 11.0	16.8	156 39.5	36.4	Elnath	279 02.2	N 28 34.4	
	08	107 08.7	333 05.5	26.8	273 46.8	20.0	167 13.5	16.9	171 42.1	36.4	Eltanin	91 04.2	N 51 30.0	
	09	122 11.1	348 04.9	26.1	288 47.7	20.6	182 16.1	16.9	186 44.6	36.4	Enif	34 25.3	N 9 42.1	
	10	137 13.6	3 04.3	25.4	303 48.7	21.3	197 18.7	16.9	201 47.2	36.4	Fomalhaut	16 06.8	S 29 49.4	
	11	152 16.1	18 03.8	24.7	318 49.7	21.9	212 21.3	16.9	216 49.7	36.5				
	12	167 18.5	33 03.2	N17 24.0	333 50.6	S 5 22.6	227 23.9	S21 17.0	231 52.3	S21 36.5	Gacrux	172 45.1	S 56 53.9	
	13	182 21.0	48 02.6	23.3	348 51.6	23.3	242 26.5	17.0	246 54.8	36.5	Gienah	176 32.9	S 17 19.6	
	14	197 23.5	63 02.0	22.6	3 52.5	23.9	257 29.1	17.0	261 57.3	36.5	Hadar	149 43.9	S 60 11.4	
	15	212 25.9	78 01.4	21.9	18 53.5	24.6	272 31.7	17.0	276 59.9	36.5	Hamal	328 44.8	N 23 16.8	
	16	227 28.4	93 00.9	21.2	33 54.5	25.2	287 34.3	17.1	292 02.4	36.5	Kaus Aust.	84 35.6	S 34 24.2	
	17	242 30.9	108 00.3	20.5	48 55.4	25.9	302 36.9	17.1	307 05.0	36.6				
	18	257 33.3	122 59.7	N17 19.8	63 56.4	S 5 26.5	317 39.5	S21 17.1	322 07.5	S21 36.6	Kochab	137 19.0	N 74 19.1	
	19	272 35.8	137 59.1	19.1	78 57.3	27.2	332 42.0	17.1	337 10.1	36.6	Markab	14 17.0	N 15 00.0	
	20	287 38.2	152 58.5	18.4	93 58.3	27.9	347 44.6	17.2	352 12.6	36.6	Menkar	314 55.9	N 3 56.4	
	21	302 40.7	167 58.0	17.7	108 59.2	28.5	2 47.2	17.2	7 15.2	36.6	Menkent	148 54.1	S 36 10.9	
	22	317 43.2	182 57.4	17.0	124 00.2	29.2	17 49.8	17.2	22 17.7	36.6	Miaplacidus	221 48.8	S 69 33.4	
23	332 45.6	197 56.8	16.2	139 01.2	29.8	32 52.4	17.2	37 20.3	36.7					
S A T U R D A Y	9 00	347 48.1	212 56.2	N17 15.5	154 02.1	S 5 30.5	47 55.0	S21 17.3	52 22.8	S21 36.7	Mirfak	309 36.3	N 49 43.3	
	01	2 50.6	227 55.7	14.8	169 03.1	31.1	62 57.6	17.3	67 25.3	36.7	Nunki	76 46.7	S 26 20.7	
	02	17 53.0	242 55.1	14.1	184 04.0	31.8	78 00.2	17.3	82 27.9	36.7	Peacock	54 20.5	S 56 51.6	
	03	32 55.5	257 54.5	13.4	199 05.0	32.5	93 02.8	17.3	97 30.4	36.7	Pollux	244 15.8	N 28 07.1	
	04	47 58.0	272 53.9	12.7	214 05.9	33.1	108 05.3	17.4	112 33.0	36.7	Procyon	245 40.9	N 5 19.5	
	05	63 00.4	287 53.4	12.0	229 06.9	33.8	123 07.9	17.4	127 35.5	36.7				
	06	78 02.9	302 52.8	N17 11.2	244 07.9	S 5 34.4	138 10.5	S21 17.4	142 38.1	S21 36.8	Rasalhague	96 42.7	N 12 35.5	
	07	93 05.4	317 52.2	10.5	259 08.8	35.1	153 13.1	17.4	157 40.6	36.8	Regulus	208 25.5	N 12 09.4	
	08	108 07.8	332 51.6	09.8	274 09.8	35.7	168 15.7	17.4	172 43.1	36.8	Rigel	281 49.7	S 8 14.6	
	09	123 10.3	347 51.1	09.1	289 10.7	36.4	183 18.3	17.5	187 45.7	36.8	Rigel Kent.	140 45.6	S 60 40.7	
	10	138 12.7	2 50.5	08.4	304 11.7	37.1	198 20.8	17.5	202 48.2	36.8	Sabik	102 57.5	S 15 40.6	
	11	153 15.2	17 49.9	07.6	319 12.6	37.7	213 23.4	17.5	217 50.8	36.8				
	12	168 17.7	32 49.3	N17 06.9	334 13.6	S 5 38.4	228 26.0	S21 17.5	232 53.3	S21 36.9	Schedar	350 24.7	N 56 19.5	
	13	183 20.1	47 48.8	06.2	349 14.5	39.0	243 28.6	17.6	247 55.8	36.9	Shaula	97 15.1	S 37 04.6	
	14	198 22.6	62 48.2	05.5	4 15.5	39.7	258 31.2	17.6	262 58.4	36.9	Sirius	259 08.4	S 16 39.6	
	15	213 25.1	77 47.6	04.7	19 16.4	40.3	273 33.8	17.6	278 00.9	36.9	Spica	159 12.8	S 10 57.5	
	16	228 27.5	92 47.0	04.0	34 17.4	41.0	288 36.4	17.6	293 03.5	36.9	Suhail	223 21.6	S 43 16.5	
	17	243 30.0	107 46.5	03.3	49 18.4	41.6	303 38.9	17.7	308 06.0	36.9				
	18	258 32.5	122 45.9	N17 02.6	64 19.3	S 5 42.3	318 41.5	S21 17.7	323 08.5	S21 36.9	Vega	81 05.3	N 38 45.2	
	19	273 34.9	137 45.3	01.8	79 20.3	43.0	333 44.1	17.7	338 11.1	37.0	Zuben'ubi	137 49.0	S 15 52.8	
	20	288 37.4	152 44.8	01.1	94 21.2	43.6	348 46.7	17.7	353 13.6	37.0				
	21	303 39.8	167 44.2	17 00.4	109 22.2	44.3	3 49.3	17.7	8 16.2	37.0				
	22	318 42.3	182 43.6	16 59.6	124 23.1	44.9	18 51.8	17.8	23 18.7	37.0	Venus	226 21.1	9 48	
23	333 44.8	197 43.0	58.9	139 24.1	45.6	33 54.4	17.8	38 21.2	37.0	Mars	166 50.1	13 45		
		Mer. Pass. 0 52.6		v 0-0.6 d 0-7		v 1-0 d 0-7		v 2-6 d 0-0		v 2-5 d 0-0				
												Saturn		64 32.7 20 31

Mer. Pass. 0 52.6

v -0.6 d 0.7

v 1.0 d 0.7

v 2.6 d 0.0

v 2.5 d 0.0

v 2.5 d 0.0

v 2.5 d 0.0

G.M.T.	SUN			MOON				Lat.	Twilight		Sun-rise	Moonrise					
	G.H.A.		Dec.	G.H.A.	°	Dec.	d		H.P.	Naut.		Civil	7	8	9	10	
	d	h															
THURSDAY	00	180 27.0	N 6 14.7	213 29.5	13.2	N16 10.4	5.4	54.0	N 72	00 28	03 15	04 34	25 23	01 23	03 05	04 43	
	01	195 27.2	13.8	228 01.7	13.2	16 05.0	5.5	54.0	68	02 21	03 49	04 50	00 46	02 10	03 35	05 00	
	02	210 27.5	12.9	242 33.9	13.3	15 59.5	5.5	54.0	66	02 46	04 01	04 57	01 08	02 26	03 46	05 07	
	03	225 27.7	11.9	257 06.2	13.3	15 54.0	5.7	54.0	64	03 05	04 11	05 02	01 25	02 39	03 55	05 12	
	04	240 27.9	11.0	271 38.5	13.4	15 48.3	5.7	54.0	62	03 20	04 20	05 07	01 39	02 50	04 03	05 16	
	05	255 28.1	10.0	286 10.9	13.3	15 42.6	5.7	54.0	60	03 32	04 27	05 11	01 51	02 59	04 09	05 20	
	06	270 28.3	N 6 09.1	300 43.2	13.4	N15 36.9	5.9	54.0	N 58	03 42	04 33	05 14	02 01	03 07	04 15	05 24	
	07	285 28.5	08.2	315 15.6	13.4	15 31.0	5.9	54.0	56	03 51	04 39	05 17	02 10	03 14	04 20	05 27	
	08	300 28.7	07.2	329 48.0	13.5	15 25.1	5.9	54.0	54	03 59	04 44	05 20	02 18	03 20	04 25	05 30	
	09	315 28.9	06.3	344 20.5	13.4	15 19.2	6.1	54.0	52	04 06	04 48	05 22	02 25	03 26	04 29	05 33	
	10	330 29.1	05.4	358 52.9	13.5	15 13.1	6.1	54.0	50	04 12	04 52	05 25	02 32	03 31	04 33	05 35	
	11	345 29.4	04.4	13 25.4	13.6	15 07.0	6.2	54.0	45	04 24	05 00	05 30	02 45	03 43	04 41	05 40	
	12	0 29.6	N 6 03.5	27 58.0	13.5	N15 00.8	6.2	54.0	N 40	04 34	05 06	05 34	02 57	03 52	04 48	05 44	
	13	15 29.8	02.6	42 30.5	13.6	14 54.6	6.3	54.0	35	04 42	05 12	05 37	03 06	04 00	04 54	05 48	
	14	30 30.0	01.6	57 03.1	13.6	14 48.3	6.4	54.0	30	04 48	05 16	05 41	03 14	04 07	04 59	05 51	
	15	45 30.2	6 00.7	71 35.7	13.7	14 41.9	6.4	54.0	20	04 58	05 24	05 46	03 29	04 18	05 08	05 57	
	16	60 30.4	5 59.8	86 08.4	13.7	14 35.5	6.5	54.0	N 10	05 05	05 29	05 50	03 42	04 29	05 15	06 01	
	17	75 30.6	58.8	100 41.1	13.7	14 29.0	6.5	54.0	0	05 10	05 33	05 54	03 54	04 39	05 23	06 06	
	18	90 30.8	N 5 57.9	115 13.8	13.7	N14 22.5	6.7	54.0	S 10	05 13	05 37	05 58	04 05	04 48	05 30	06 11	
	19	105 31.1	56.9	129 46.5	13.8	14 15.8	6.6	54.0	20	05 15	05 41	06 03	04 18	04 59	05 38	06 15	
	20	120 31.3	56.0	144 19.3	13.7	14 09.2	6.8	54.0	30	05 16	05 43	06 07	04 33	05 11	05 47	06 21	
	21	135 31.5	55.1	158 52.0	13.8	14 02.4	6.8	54.0	35	05 15	05 45	06 10	04 41	05 17	05 52	06 24	
	22	150 31.7	54.1	173 24.8	13.9	13 55.6	6.9	54.0	40	05 15	05 46	06 13	04 50	05 25	05 57	06 27	
	23	165 31.9	53.2	187 57.7	13.8	13 48.7	6.9	54.0	45	05 13	05 47	06 16	05 01	05 34	06 04	06 32	
FRIDAY	00	180 32.1	N 5 52.2	202 30.5	13.9	N13 41.8	7.0	54.0	S 50	05 11	05 48	06 20	05 14	05 45	06 12	06 36	
	01	195 32.3	51.3	217 03.4	14.0	13 34.8	7.0	54.0	52	05 09	05 48	06 22	05 21	05 50	06 15	06 39	
	02	210 32.5	50.4	231 36.4	13.9	13 27.8	7.1	54.0	54	05 08	05 49	06 24	05 27	05 55	06 19	06 41	
	03	225 32.8	49.4	246 09.3	14.0	13 20.7	7.2	54.0	56	05 06	05 49	06 26	05 35	06 01	06 24	06 44	
	04	240 33.0	48.5	260 42.3	14.0	13 13.5	7.2	54.0	58	05 04	05 49	06 29	05 44	06 08	06 29	06 47	
	05	255 33.2	47.6	275 15.3	14.0	13 06.3	7.2	54.0	S 60	05 02	05 50	06 31	05 54	06 16	06 34	06 50	
	06	270 33.4	N 5 46.6	289 48.3	14.0	N12 59.1	7.4	54.0	Lat.	Sun-set	Twilight		Moonset				
	07	285 33.6	45.7	304 21.3	14.1	12 51.7	7.4	54.0			Civil	Naut.	7	8	9	10	
	08	300 33.8	44.7	318 54.4	14.1	12 44.3	7.4	54.0									
	09	315 34.0	43.8	333 27.5	14.1	12 36.9	7.5	54.0									
	10	330 34.2	42.9	348 00.6	14.2	12 29.4	7.5	54.0									
	11	345 34.5	41.9	2 33.8	14.1	12 21.9	7.6	54.0	N 72	19 19	20 36	23 03	19 45	19 34	19 26	19 18	
	12	0 34.7	N 5 41.0	17 06.9	14.2	N12 14.3	7.7	54.0	N 70	19 10	20 18	22 02	19 16	19 16	19 15	19 13	
	13	15 34.9	40.0	31 40.1	14.3	12 06.6	7.7	54.0	68	19 03	20 03	21 29	18 56	19 02	19 06	19 09	
	14	30 35.1	39.1	46 13.4	14.2	11 58.9	7.7	54.0	66	18 56	19 51	21 05	18 39	18 50	18 58	19 05	
	15	45 35.3	38.2	60 46.6	14.3	11 51.2	7.9	54.0	64	18 52	19 42	20 47	18 25	18 40	18 52	19 02	
	16	60 35.5	37.2	75 19.9	14.3	11 43.3	7.8	54.0	62	18 47	19 34	20 33	18 13	18 31	18 46	18 59	
	17	75 35.7	36.3	89 53.2	14.3	11 35.5	7.9	54.0	60	18 43	19 27	20 21	18 04	18 24	18 41	18 56	
	18	90 36.0	N 5 35.3	104 26.5	14.3	N11 27.6	8.0	54.0	N 58	18 40	19 21	20 11	17 55	18 17	18 37	18 54	
	19	105 36.2	34.4	118 59.8	14.3	11 19.6	8.0	54.0	56	18 37	19 15	20 02	17 47	18 12	18 33	18 52	
	20	120 36.4	33.4	133 33.1	14.4	11 11.6	8.0	54.0	54	18 34	19 10	19 55	17 41	18 06	18 29	18 50	
	21	135 36.6	32.5	148 06.5	14.4	11 03.6	8.1	54.0	52	18 32	19 06	19 48	17 34	18 02	18 26	18 49	
	22	150 36.8	31.6	162 39.9	14.4	10 55.5	8.2	54.0	50	18 30	19 02	19 42	17 29	17 58	18 23	18 47	
	23	165 37.0	30.6	177 13.3	14.5	10 47.3	8.2	54.0	45	18 25	18 55	19 30	17 17	17 48	18 17	18 44	
SATURDAY	00	180 37.2	N 5 29.7	191 46.8	14.4	N10 39.1	8.2	54.0	N 40	18 21	18 48	19 21	17 07	17 40	18 12	18 41	
	01	195 37.5	28.7	206 20.2	14.5	10 30.9	8.3	54.1	35	18 17	18 43	19 13	16 58	17 34	18 07	18 39	
	02	210 37.7	27.8	220 53.7	14.5	10 22.6	8.4	54.1	30	18 14	18 38	19 07	16 51	17 28	18 03	18 37	
	03	225 37.9	26.9	235 27.2	14.5	10 14.2	8.4	54.1	20	18 09	18 31	18 57	16 38	17 18	17 56	18 33	
	04	240 38.1	25.9	250 00.7	14.5	10 05.8	8.4	54.1	N 10	18 05	18 26	18 51	16 26	17 09	17 50	18 30	
	05	255 38.3	25.0	264 34.2	14.6	9 57.4	8.4	54.1	0	18 01	18 22	18 46	16 16	17 00	17 44	18 27	
	06	270 38.5	N 5 24.0	279 07.8	14.6	N 9 49.0	8.6	54.1	S 10	17 57	18 18	18 43	16 05	16 52	17 38	18 24	
	07	285 38.7	23.1	293 41.4	14.6	9 40.4	8.5	54.1	20	17 53	18 15	18 41	15 53	16 42	17 31	18 20	
	08	300 39.0	22.1	308 15.0	14.6	9 31.9	8.6	54.1	30	17 49	18 13	18 40	15 39	16 32	17 24	18 16	
	09	315 39.2	21.2	322 48.6	14.6	9 23.3	8.6	54.1	35	17 46	18 11	18 41	15 32	16 26	17 20	18 14	
	10	330 39.4	20.2	337 22.2	14.6	9 14.7	8.7	54.1	40	17 43	18 10	18 42	15 23	16 19	17 15	18 12	
	11	345 39.6	19.3	351 55.8	14.7	9 06.0	8.7	54.1	45	17 40	18 09	18 43	15 13	16 11	17 09	18 09	
	12	0 39.8	N 5 18.4	6 29.5	14.7	N 8 57.3	8.8	54.1	S 50	17 36	18 08	18 46	15 00	16 01	17 03	18 05	
	13	15 40.0	17.4	21 03.2	14.6	8 48.5	8.8	54.1	52	17 34	18 08	18 47	14 54	15 56	17 00	18 04	
	14	30 40.3	16.5	35 36.8	14.7	8 39.7	8.8	54.1	54	17 32	18 08	18 49	14 48	15 51	16 56	18 02	
	15	45 40.5	15.5	50 10.5	14.8	8 30.9	8.9	54.1	56	17 30	18 07	18 51	14 40	15 46	16 52	18 00	
	16	60 40.7	14.6	64 44.3	14.7	8 22.0	8.9	54.1	58	17 28	18 07	18 53	14 32	15 39	16 48	17 58	
	17	75 40.9	13.6	79 18.0	14.7	8 13.1	9.0	54.1	S 60	17 25	18 07	18 55	14 23	15 32	16 43	17 55	
	18	90 41.1	N 5 12.7	93 51.7	14.8	N 8 04.1	8.9	54.2	Day	SUN		MOON					
	19	105 41.3	11.7	108 25.5	14.8	7 55.2	9.1	54.2		Eqn. of Time	Mer. Pass.	Mer. Upper	Pass. Lower	Age	Phase		
	20	120 41.5	10.8	122 59.3	14.7	7 46.1	9.0	54.2	00h	12h							
	21	135 41.8	09.8	137 33.0	14.8	7 37.1	9.1	54.2	m s	m s	h m	h m	h m	d			
	22	150 42.0	08.9	152 06.8	14.8	7 28.0	9.1	54.2	01 48	01 58	11 58	10 05	22 27	27			
	23	165 42.2	08.0	166 40.6	14.9												

G.M.T.	ARIES		VENUS -3.4		MARS +1.9		JUPITER -2.2		SATURN +0.6		STARS		
	G.H.A.	Dec.	G.H.A.	Dec.	G.H.A.	Dec.	G.H.A.	Dec.	G.H.A.	Dec.	Name	S.H.A.	Dec.
10													
00	348 47.2	212 42.5 N16 58.2	154 25.0 S 5 46.2	48 57.0 S21 17.8	53 23.8 S21 37.0	Acamar	315 47.8	S 40 27.3					
01	3 49.7	227 41.9 57.5	169 26.0 46.9	63 59.6 17.8	68 26.3 37.1	Achernar	335 55.5	S 57 25.7					
02	18 52.2	242 41.3 56.7	184 26.9 47.6	79 02.2 17.9	83 28.9 37.1	Acruz	173 53.7	S 62 53.2					
03	33 54.6	257 40.8 56.0	199 27.9 48.2	94 04.7 17.9	98 31.4 37.1	Adhara	255 43.5	S 28 55.0					
04	48 57.1	272 40.2 55.2	214 28.8 48.9	109 07.3 17.9	113 33.9 37.1	Aldebaran	291 34.3	N 16 25.9					
05	63 59.6	287 39.6 54.5	229 29.8 49.5	124 09.9 17.9	128 36.5 37.1								
06	79 02.0	302 39.1 N16 53.8	244 30.7 S 5 50.2	139 12.5 S21 17.9	143 39.0 S21 37.1	Alioth	166 55.6	N 56 10.3					
07	94 04.5	317 38.5 53.0	259 31.7 50.8	154 15.1 18.0	158 41.6 37.1	Alkaid	153 30.1	N 49 30.6					
08	109 07.0	332 37.9 52.3	274 32.6 51.5	169 17.6 18.0	173 44.1 37.2	Al Na'ir	28 32.4	S 47 08.8					
09	124 09.4	347 37.3 51.6	289 33.6 52.1	184 20.2 18.0	188 46.6 37.2	Alnilam	276 26.2	S 1 13.5					
10	139 11.9	2 36.8 50.8	304 34.6 52.8	199 22.8 18.0	203 49.2 37.2	Alphard	218 34.8	S 8 29.4					
11	154 14.3	17 36.2 50.1	319 35.5 53.5	214 25.4 18.1	218 51.7 37.2								
12	169 16.8	32 35.6 N16 49.3	334 36.5 S 5 54.1	229 27.9 S21 18.1	233 54.2 S21 37.2	Alphecca	126 44.3	N 26 50.9					
13	184 19.3	47 35.1 48.6	349 37.4 54.8	244 30.5 18.1	248 56.8 37.2	Alpheratz	358 23.7	N 28 52.8					
14	199 21.7	62 34.5 47.8	4 38.4 55.4	259 33.1 18.1	263 59.3 37.2	Altair	62 46.2	N 8 46.2					
15	214 24.2	77 33.9 47.1	19 39.3 56.1	274 35.7 18.1	279 01.9 37.3	Ankaa	353 53.9	S 42 30.7					
16	229 26.7	92 33.4 46.3	34 40.3 56.7	289 38.2 18.2	294 04.4 37.3	Antares	113 14.4	S 26 20.8					
17	244 29.1	107 32.8 45.6	49 41.2 57.4	304 40.8 18.2	309 06.9 37.3								
18	259 31.6	122 32.2 N16 44.9	64 42.2 S 5 58.0	319 43.4 S21 18.2	324 09.5 S21 37.3	Arcturus	146 31.7	N 19 23.2					
19	274 34.1	137 31.7 44.1	79 43.1 58.7	334 46.0 18.2	339 12.0 37.3	Atria	108 51.4	S 68 57.7					
20	289 36.5	152 31.1 43.4	94 44.1 59.4	349 48.5 18.2	354 14.5 37.3	Avior	234 34.5	S 59 23.0					
21	304 39.0	167 30.6 42.6	109 45.0 60.0	4 51.1 18.3	9 17.1 37.3	Bellatrix	279 14.1	N 6 19.0					
22	319 41.4	182 30.0 41.9	124 46.0 00.7	19 53.7 18.3	24 19.6 37.4	Betelgeuse	271 43.7	N 7 24.0					
23	334 43.9	197 29.4 41.1	139 46.9 01.3	34 56.2 18.3	39 22.1 37.4								
11													
00	349 46.4	212 28.9 N16 40.4	154 47.9 S 6 02.0	49 58.8 S21 18.3	54 24.7 S21 37.4	Canopus	264 13.7	S 52 40.2					
01	4 48.8	227 28.3 39.6	169 48.8 02.6	65 01.4 18.3	69 27.2 37.4	Capella	281 32.3	N 45 57.4					
02	19 51.3	242 27.7 38.8	184 49.8 03.3	80 04.0 18.4	84 29.7 37.4	Deneb	49 57.8	N 45 08.8					
03	34 53.8	257 27.2 38.1	199 50.7 03.9	95 06.5 18.4	99 32.3 37.4	Denebola	183 13.9	N 14 47.4					
04	49 56.2	272 26.6 37.3	214 51.7 04.6	110 09.1 18.4	114 34.8 37.4	Diphda	349 34.9	S 18 11.7					
05	64 58.7	287 26.0 36.6	229 52.6 05.3	125 11.7 18.4	129 37.3 37.5								
06	80 01.2	302 25.5 N16 35.8	244 53.6 S 6 05.9	140 14.2 S21 18.5	144 39.9 S21 37.5	Dubhe	194 40.4	N 61 57.6					
07	95 03.6	317 24.9 35.1	259 54.5 06.6	155 16.8 18.5	159 42.4 37.5	Elnath	279 02.2	N 28 34.4					
08	110 06.1	332 24.4 34.3	274 55.5 07.2	170 19.4 18.5	174 45.0 37.5	Eltanin	91 04.2	N 51 30.0					
09	125 08.6	347 23.8 33.5	289 56.4 07.9	185 21.9 18.5	189 47.5 37.5	Enif	34 25.3	N 9 42.1					
10	140 11.0	2 23.2 32.8	304 57.4 08.5	200 24.5 18.5	204 50.0 37.5	Fomalhaut	16 06.8	S 29 49.5					
11	155 13.5	17 22.7 32.0	319 58.3 09.2	215 27.1 18.6	219 52.6 37.5								
12	170 15.9	32 22.1 N16 31.3	334 59.2 S 6 09.8	230 29.6 S21 18.6	234 55.1 S21 37.6	Gacrux	172 45.1	S 56 53.9					
13	185 18.4	47 21.6 30.5	350 00.2 10.5	245 32.2 18.6	249 57.6 37.6	Gienah	176 32.9	S 17 19.6					
14	200 20.9	62 21.0 29.7	5 01.1 11.2	260 34.8 18.6	265 00.1 37.6	Hadar	149 44.0	S 60 11.3					
15	215 23.3	77 20.4 29.0	20 02.1 11.8	275 37.3 18.6	280 02.7 37.6	Hamal	328 44.7	N 23 16.9					
16	230 25.8	92 19.9 28.2	35 03.0 12.5	290 39.9 18.6	295 05.2 37.6	Kaus Aust.	84 35.6	S 34 24.2					
17	245 28.3	107 19.3 27.4	50 04.0 13.1	305 42.5 18.7	310 07.7 37.6								
18	260 30.7	122 18.8 N16 26.7	65 04.9 S 6 13.8	320 45.0 S21 18.7	325 10.3 S21 37.6	Kochab	137 19.0	N 74 19.1					
19	275 33.2	137 18.2 25.9	80 05.9 14.4	335 47.6 18.7	340 12.8 37.6	Markab	14 17.0	N 15 00.0					
20	290 35.7	152 17.6 25.1	95 06.8 15.1	350 50.2 18.7	355 15.3 37.7	Menkar	314 55.9	N 3 56.4					
21	305 38.1	167 17.1 24.4	110 07.8 15.7	5 52.7 18.7	10 17.9 37.7	Menkent	148 54.1	S 36 10.9					
22	320 40.6	182 16.5 23.6	125 08.7 16.4	20 55.3 18.8	25 20.4 37.7	Miaplacidus	221 48.7	S 69 33.4					
23	335 43.1	197 16.0 22.8	140 09.7 17.0	35 57.9 18.8	40 22.9 37.7								
12													
00	350 45.5	212 15.4 N16 22.0	155 10.6 S 6 17.7	51 00.4 S21 18.8	55 25.5 S21 37.7	Mirfak	309 36.2	N 49 43.3					
01	5 48.0	227 14.8 21.3	170 11.6 18.3	66 03.0 18.8	70 28.0 37.7	Nunki	76 46.7	S 26 20.7					
02	20 50.4	242 14.3 20.5	185 12.5 19.0	81 05.6 18.8	85 30.5 37.7	Peacock	54 20.5	S 56 51.6					
03	35 52.9	257 13.7 19.7	200 13.5 19.7	96 08.1 18.9	100 33.1 37.8	Pollux	244 15.8	N 28 07.1					
04	50 55.4	272 13.2 18.9	215 14.4 20.3	111 10.7 18.9	115 35.6 37.8	Procyon	245 40.9	N 5 19.5					
05	65 57.8	287 12.6 18.2	230 15.3 21.0	126 13.2 18.9	130 38.1 37.8								
06	81 00.3	302 12.1 N16 17.4	245 16.3 S 6 21.6	141 15.8 S21 18.9	145 40.7 S21 37.8	Rasalhague	96 42.8	N 12 35.5					
07	96 02.8	317 11.5 16.6	260 17.2 22.3	156 18.4 18.9	160 43.2 37.8	Regulus	208 25.5	N 12 09.4					
08	111 05.2	332 11.0 15.8	275 18.2 22.9	171 20.9 19.0	175 45.7 37.8	Rigel	281 49.7	S 8 14.6					
09	126 07.7	347 10.4 15.1	290 19.1 23.6	186 23.5 19.0	190 48.2 37.8	Rigel Kent.	140 45.7	S 60 40.7					
10	141 10.2	2 09.9 14.3	305 20.1 24.2	201 26.0 19.0	205 50.8 37.9	Sabik	102 57.5	S 15 40.6					
11	156 12.6	17 09.3 13.5	320 21.0 24.9	216 28.6 19.0	220 53.3 37.9								
12	171 15.1	32 08.7 N16 12.7	335 22.0 S 6 25.5	231 31.2 S21 19.0	235 55.8 S21 37.9	Schedar	350 24.7	N 56 19.5					
13	186 17.5	47 08.2 11.9	350 22.9 26.2	246 33.7 19.0	250 58.4 37.9	Shaula	97 15.1	S 37 04.6					
14	201 20.0	62 07.6 11.1	5 23.8 26.9	261 36.3 19.1	266 00.9 37.9	Sirius	259 08.4	S 16 39.6					
15	216 22.5	77 07.1 10.4	20 24.8 27.5	276 38.8 19.1	281 03.4 37.9	Spica	159 12.8	S 10 57.5					
16	231 24.9	92 06.5 09.6	35 25.7 28.2	291 41.4 19.1	296 05.9 37.9	Suhail	223 21.6	S 43 16.4					
17	246 27.4	107 06.0 08.8	50 26.7 28.8	306 43.9 19.1	311 08.5 37.9								
18	261 29.9	122 05.4 N16 08.0	65 27.6 S 6 29.5	321 46.5 S21 19.1	326 11.0 S21 38.0	Vega	81 05.3	N 38 45.2					
19	276 32.3	137 04.9 07.2	80 28.6 30.1	336 49.1 19.2	341 13.5 38.0	Zuben'ubi	137 49.0	S 15 52.8					
20	291 34.8	152 04.3 06.4	95 29.5 30.8	351 51.6 19.2	356 16.1 38.0								
21	306 37.3	167 03.8 05.6	110 30.4 31.4	6 54.2 19.2	11 18.6 38.0								
22	321 39.7	182 03.2 04.9	125 31.4 32.1	21 56.7 19.2	26 21.1 38.0	Venus	222 42.5	9 50					
23	336 42.2	197 02.7 04.1	140 32.3 32.7	36 59.3 19.2	41 23.6 38.0	Mars	165 01.5	13 40					
Mer. Pass.	h 0 40.8	v -0.6 d 0.8	v 0.9 d 0.7	v 2.6 d 0.0	v 2.5 d 0.0	Jupiter	60 12.4	20 37					
						Saturn	64 38.3	20 19					

G.M.T.	SUN				MOON				Lat.	Twilight		Sun-rise	Moonrise					
	G.H.A.		Dec.	H.P.	G.H.A.		Dec.	H.P.		Naut.	Civil		10	11	12	13		
	d	h			d	h												
SUNDAY	00	180 42.4	N 5	07.0	181 14.5	14.8	N	7 09.7	9.1	54.2	N 72	01 24	03 32	04 48	04 43	06 20	07 58	09 37
	01	195 42.6		06.1	195 48.3	14.8		7 00.6	9.3	54.2	N 70	02 10	03 49	04 55	04 53	06 23	07 55	09 28
	02	210 42.8		05.1	210 22.1	14.9		6 51.3	9.2	54.2	N 68	02 39	04 02	05 01	05 00	06 26	07 52	09 20
	03	225 43.1		04.2	224 56.0	14.8		6 42.1	9.3	54.2	N 66	03 00	04 12	05 06	05 07	06 28	07 51	09 14
	04	240 43.3		03.2	239 29.8	14.9		6 32.8	9.3	54.2	N 64	03 16	04 21	05 11	05 12	06 30	07 49	09 09
	05	255 43.5		02.3	254 03.7	14.9		6 23.5	9.3	54.2	N 62	03 30	04 28	05 14	05 16	06 31	07 47	09 04
	06	270 43.7	N	5 01.3	268 37.6	14.8	N	6 14.2	9.4	54.3	N 60	03 41	04 35	05 18	05 20	06 33	07 46	09 01
	07	285 43.9		5 00.4	283 11.4	14.9		6 04.8	9.4	54.3	N 58	03 50	04 40	05 21	05 24	06 34	07 45	08 57
	08	300 44.1		4 59.4	297 45.3	14.9		5 55.4	9.4	54.3	N 56	03 58	04 45	05 23	05 27	06 35	07 44	08 54
	09	315 44.3		58.5	312 19.2	14.9		5 46.0	9.5	54.3	N 54	04 05	04 49	05 25	05 30	06 36	07 43	08 51
	10	330 44.6		57.5	326 53.1	14.9		5 36.5	9.5	54.3	N 52	04 12	04 53	05 27	05 33	06 37	07 42	08 49
	11	345 44.8		56.6	341 27.0	15.0		5 27.0	9.5	54.3	N 50	04 17	04 56	05 29	05 35	06 38	07 42	08 46
	12	0 45.0	N	4 55.6	356 01.0	14.9	N	5 17.5	9.5	54.3	N 48	04 28	05 04	05 33	05 40	06 40	07 40	08 41
	13	15 45.2		54.7	10 34.9	14.9		5 08.0	9.5	54.3	N 40	04 37	05 09	05 37	05 44	06 41	07 39	08 37
	14	30 45.4		53.7	25 08.8	14.9		4 58.5	9.6	54.3	N 35	04 44	05 14	05 39	05 48	06 43	07 38	08 34
	15	45 45.6		52.8	39 42.7	14.9		4 48.9	9.6	54.3	N 30	04 50	05 18	05 42	05 51	06 44	07 37	08 31
	16	60 45.9		51.8	54 16.6	15.0		4 39.3	9.6	54.3	N 20	04 58	05 24	05 46	05 57	06 46	07 35	08 25
	17	75 46.1		50.9	68 50.6	14.9		4 29.7	9.7	54.4	N 10	05 05	05 29	05 50	06 01	06 47	07 34	08 21
	18	90 46.3	N	4 50.0	83 24.5	14.9	N	4 20.0	9.6	54.4	N 0	05 09	05 33	05 53	06 06	06 49	07 32	08 16
	19	105 46.5		49.0	97 58.4	15.0		4 10.4	9.7	54.4	S 10	05 11	05 36	05 57	06 11	06 51	07 31	08 12
	20	120 46.7		48.1	112 32.4	14.9		4 00.7	9.7	54.4	S 20	05 12	05 38	06 00	06 15	06 52	07 29	08 07
	21	135 46.9		47.1	127 06.3	15.0		3 51.0	9.8	54.4	S 30	05 12	05 40	06 04	06 21	06 54	07 28	08 02
	22	150 47.2		46.2	141 40.3	14.9		3 41.2	9.7	54.4	S 35	05 11	05 40	06 06	06 24	06 56	07 27	07 59
	23	165 47.4		45.2	156 14.2	14.9		3 31.5	9.8	54.4	S 40	05 10	05 41	06 08	06 27	06 57	07 26	07 56
24										S 45	05 07	05 41	06 10	06 32	06 58	07 25	07 52	
MONDAY	00	180 47.6	N	4 44.3	170 48.1	15.0	N	3 21.7	9.8	54.4	S 50	05 04	05 41	06 14	06 36	07 00	07 23	07 47
	01	195 47.8		43.3	185 22.1	14.9		3 11.9	9.8	54.4	S 52	05 02	05 41	06 15	06 39	07 01	07 23	07 45
	02	210 48.0		42.4	199 56.0	14.9		3 02.1	9.8	54.5	S 54	05 00	05 41	06 17	06 41	07 02	07 22	07 43
	03	225 48.3		41.4	214 29.9	15.0		2 52.3	9.8	54.5	S 56	04 58	05 41	06 18	06 44	07 03	07 21	07 40
	04	240 48.5		40.5	229 03.9	14.9		2 42.5	9.9	54.5	S 58	04 56	05 41	06 20	06 47	07 04	07 20	07 38
	05	255 48.7		39.5	243 37.8	14.9		2 32.6	9.8	54.5	S 60	04 53	05 41	06 22	06 50	07 05	07 19	07 34
	06	270 48.9	N	4 38.6	258 11.7	14.9	N	2 22.8	9.9	54.5								
	07	285 49.1		37.6	272 45.6	14.9		2 12.9	9.9	54.5	Lat.	Sun-set	Twilight	Moonset				
	08	300 49.3		36.7	287 19.5	14.9		2 03.0	9.9	54.5			Civil	Naut.	10	11	12	13
	09	315 49.6		35.7	301 53.4	14.9		1 53.1	9.9	54.5								
	10	330 49.8		34.8	316 27.3	14.9		1 43.2	9.9	54.6								
	11	345 50.0		33.8	331 01.2	14.9		1 33.3	10.0	54.6								
	12	0 50.2	N	4 32.9	345 35.1	14.9	N	1 23.3	9.9	54.6	N 72	19 03	20 17	22 18	19 18	19 11	19 04	18 56
	13	15 50.4		31.9	0 09.0	14.9		1 13.4	10.0	54.6	N 70	18 56	20 01	21 37	19 13	19 11	19 09	19 07
	14	30 50.6		31.0	14 42.9	14.8		1 03.4	9.9	54.6	N 68	18 50	19 49	21 10	19 09	19 11	19 13	19 16
	15	45 50.9		30.0	29 16.7	14.9		0 53.5	10.0	54.6	N 66	18 45	19 39	20 50	19 05	19 11	19 17	19 24
	16	60 51.1		29.0	43 50.6	14.8		0 43.5	10.0	54.6	N 64	18 41	19 30	20 34	19 02	19 11	19 20	19 30
	17	75 51.3		28.1	58 24.4	14.8		0 33.5	10.0	54.6	N 62	18 37	19 23	20 21	18 59	19 11	19 23	19 36
	18	90 51.5	N	4 27.1	72 58.2	14.8	N	0 23.5	10.0	54.7	N 60	18 34	19 17	20 10	18 56	19 11	19 25	19 41
	19	105 51.7		26.2	87 32.0	14.8		0 13.5	10.0	54.7	N 58	18 31	19 12	20 01	18 54	19 11	19 27	19 45
	20	120 52.0		25.2	102 05.8	14.8	N	0 03.5	10.0	54.7	N 56	18 29	19 07	19 53	18 52	19 11	19 29	19 49
	21	135 52.2		24.3	116 39.6	14.8	S	0 06.5	10.0	54.7	N 54	18 27	19 03	19 46	18 50	19 11	19 31	19 53
	22	150 52.4		23.3	131 13.4	14.8		0 16.5	10.0	54.7	N 52	18 25	18 59	19 40	18 49	19 10	19 32	19 56
	23	165 52.6		22.4	145 47.2	14.7		0 26.5	10.0	54.7	N 50	18 23	18 56	19 35	18 47	19 10	19 34	19 59
24										N 45	18 19	18 49	19 24	18 44	19 10	19 37	20 05	
TUESDAY	00	180 52.8	N	4 21.4	160 20.9	14.7	S	0 36.5	10.0	54.7	N 40	18 16	18 43	19 15	18 41	19 10	19 40	20 10
	01	195 53.0		20.5	174 54.6	14.7		0 46.5	10.0	54.8	N 35	18 13	18 39	19 08	18 39	19 10	19 42	20 15
	02	210 53.3		19.5	189 28.3	14.7		0 56.5	10.1	54.8	N 30	18 11	18 35	19 03	18 37	19 10	19 44	20 19
	03	225 53.5		18.6	204 02.0	14.7		1 06.6	10.0	54.8	N 20	18 07	18 29	18 54	18 33	19 10	19 47	20 26
	04	240 53.7		17.6	218 35.7	14.7		1 16.6	10.0	54.8	N 10	18 03	18 24	18 49	18 30	19 10	19 50	20 32
	05	255 53.9		16.7	233 09.4	14.6		1 26.6	10.0	54.8	N 0	18 00	18 21	18 45	18 27	19 10	19 53	20 38
	06	270 54.1	N	4 15.7	247 43.0	14.7	S	1 36.6	10.0	54.8	S 10	17 57	18 18	18 42	18 24	19 10	19 56	20 44
	07	285 54.4		14.8	262 16.7	14.6		1 46.6	10.1	54.8	S 20	17 54	18 16	18 41	18 20	19 09	19 59	20 50
	08	300 54.6		13.8	276 50.3	14.6		1 56.7	10.0	54.9	S 30	17 50	18 14	18 42	18 16	19 09	20 03	20 57
	09	315 54.8		12.9	291 23.9	14.5		2 06.7	10.0	54.9	S 35	17 48	18 14	18 43	18 14	19 09	20 05	21 01
	10	330 55.0		11.9	305 57.4	14.6		2 16.7	10.0	54.9	S 40	17 46	18 13	18 44	18 12	19 09	20 07	21 06
	11	345 55.2		10.9	320 31.0	14.5		2 26.7	10.0	54.9	S 45	17 44	18 13	18 47	18 09	19 09	20 09	21 11
	12	0 55.5	N	4 10.0	335 04.5	14.5	S	2 36.7	10.0	54.9	S 50	17 41	18 13	18 50	18 05	19 08	20 13	21 17
	13	15 55.7		09.0	349 38.0	14.5		2 46.7	10.0	54.9	S 52	17 39	18 13	18 52	18 04	19 08	20 14	21 20
	14	30 55.9		08.1	4 11.5	14.4		2 56.7	9.9	55.0	S 54	17 38	18 13	18 54	18 02	19 08	20 16	21 24
	15	45 56.1		07.1	18 44.9	14.5		3 0										

G.M.T.	ARIES			VENUS -3.4			MARS +1.9			JUPITER -2.2			SATURN +0.6			STARS		
	G.H.A.	G.H.A.	Dec.	G.H.A.	G.H.A.	Dec.	G.H.A.	G.H.A.	Dec.	G.H.A.	G.H.A.	Dec.	G.H.A.	G.H.A.	Dec.	Name	S.H.A.	Dec.
d h																		
13 00	351 44.7	212 02.1	N16 03.3	155 33.3	S 6 33.4		52 01.8	S21 19.2	56 26.2	S21 38.0			Acamar	315 47.8	S 40 27.3			
01	6 47.1	227 01.6	02.5	170 34.2	34.0		67 04.4	19.3	71 28.7	38.1			Achernar	335 55.4	S 57 25.7			
02	21 49.6	242 01.0	01.7	185 35.2	34.7		82 06.9	19.3	86 31.2	38.1			Acrux	173 53.7	S 62 53.2			
03	36 52.0	257 00.5	00.9	200 36.1	35.3		97 09.5	19.3	101 33.7	38.1			Adhara	255 43.4	S 28 55.0			
04	51 54.5	271 59.9	16 00.1	215 37.0	36.0		112 12.1	19.3	116 36.3	38.1			Aldebaran	291 34.3	N 16 25.9			
05	66 57.0	286 59.4	15 59.3	230 38.0	36.7		127 14.6	19.3	131 38.8	38.1								
06	81 59.4	301 58.8	N15 58.5	245 38.9	S 6 37.3		142 17.2	S21 19.3	146 41.3	S21 38.1			Alioth	166 55.6	N 56 10.3			
07	97 01.9	316 58.3	57.7	260 39.9	38.0		157 19.7	19.4	161 43.9	38.1			Alkaid	153 30.1	N 49 30.6			
08	112 04.4	331 57.7	56.9	275 40.8	38.6		172 22.3	19.4	176 46.4	38.1			Al Na'ir	28 32.4	S 47 08.8			
09	127 06.8	346 57.2	56.1	290 41.7	39.3		187 24.8	19.4	191 48.9	38.2			Alnilam	276 26.1	S 1 13.5			
10	142 09.3	1 56.6	55.3	305 42.7	39.9		202 27.4	19.4	206 51.4	38.2			Alphard	218 34.8	S 8 29.4			
11	157 11.8	16 56.1	54.5	320 43.6	40.6		217 29.9	19.4	221 54.0	38.2								
12	172 14.2	31 55.5	N15 53.7	335 44.6	S 6 41.2		232 32.5	S21 19.4	236 56.5	S21 38.2			Alphecca	126 44.4	N 26 50.9			
13	187 16.7	46 55.0	52.9	350 45.5	41.9		247 35.0	19.5	251 59.0	38.2			Alpheratz	358 23.7	N 28 52.8			
14	202 19.1	61 54.4	52.1	5 46.4	42.5		262 37.6	19.5	267 01.5	38.2			Altair	62 46.2	N 8 46.2			
15	217 21.6	76 53.9	51.3	20 47.4	43.2		277 40.1	19.5	282 04.0	38.2			Ankaa	353 53.9	S 42 30.7			
16	232 24.1	91 53.4	50.5	35 48.3	43.8		292 42.7	19.5	297 06.6	38.2			Antares	113 14.4	S 26 20.8			
17	247 26.5	106 52.8	49.7	50 49.3	44.5		307 45.2	19.5	312 09.1	38.2								
18	262 29.0	121 52.3	N15 48.9	65 50.2	S 6 45.1		322 47.8	S21 19.5	327 11.6	S21 38.3			Arcturus	146 31.7	N 19 23.2			
19	277 31.5	136 51.7	48.1	80 51.1	45.8		337 50.3	19.6	342 14.1	38.3			Atria	108 51.5	S 68 57.7			
20	292 33.9	151 51.2	47.3	95 52.1	46.4		352 52.9	19.6	357 16.7	38.3			Avior	234 34.4	S 59 22.9			
21	307 36.4	166 50.6	46.5	110 53.0	47.1		7 55.4	19.6	12 19.2	38.3			Bellatrix	279 14.0	N 6 19.0			
22	322 38.9	181 50.1	45.7	125 54.0	47.7		22 58.0	19.6	27 21.7	38.3			Betelgeuse	271 43.7	N 7 24.0			
23	337 41.3	196 49.5	44.8	140 54.9	48.4		38 00.5	19.6	42 24.2	38.3								
14 00	352 43.8	211 49.0	N15 44.0	155 55.8	S 6 49.1		53 03.1	S21 19.6	57 26.8	S21 38.3			Canopus	264 13.7	S 52 40.2			
01	7 46.3	226 48.5	43.2	170 56.8	49.7		68 05.6	19.6	72 29.3	38.3			Capella	281 32.3	N 45 57.4			
02	22 48.7	241 47.9	42.4	185 57.7	50.4		83 08.1	19.7	87 31.8	38.4			Deneb	49 57.8	N 45 08.9			
03	37 51.2	256 47.4	41.6	200 58.7	51.0		98 10.7	19.7	102 34.3	38.4			Denebola	183 13.9	N 14 47.4			
04	52 53.6	271 46.8	40.8	215 59.6	51.7		113 13.2	19.7	117 36.9	38.4			Diphda	349 34.8	S 18 11.7			
05	67 56.1	286 46.3	40.0	231 00.5	52.3		128 15.8	19.7	132 39.4	38.4								
06	82 58.6	301 45.7	N15 39.1	246 01.5	S 6 53.0		143 18.3	S21 19.7	147 41.9	S21 38.4			Dubhe	194 40.4	N 61 57.6			
07	98 01.0	316 45.2	38.3	261 02.4	53.6		158 20.9	19.7	162 44.4	38.4			Elnath	279 02.1	N 28 34.4			
08	113 03.5	331 44.7	37.5	276 03.3	54.3		173 23.4	19.8	177 46.9	38.4			Eltanin	91 04.3	N 51 30.0			
09	128 06.0	346 44.1	36.7	291 04.3	54.9		188 26.0	19.8	192 49.5	38.4			Enif	34 25.3	N 9 42.1			
10	143 08.4	1 43.6	35.9	306 05.2	55.6		203 28.5	19.8	207 52.0	38.4			Fomalhaut	16 06.8	S 29 49.5			
11	158 10.9	16 43.0	35.1	321 06.2	56.2		218 31.0	19.8	222 54.5	38.5								
12	173 13.4	31 42.5	N15 34.2	336 07.1	S 6 56.9		233 33.6	S21 19.8	237 57.0	S21 38.5			Gacrux	172 45.1	S 56 53.9			
13	188 15.8	46 42.0	33.4	351 08.0	57.5		248 36.1	19.8	252 59.5	38.5			Gienah	176 32.9	S 17 19.6			
14	203 18.3	61 41.4	32.6	6 09.0	58.2		263 38.7	19.8	268 02.1	38.5			Hadar	149 44.0	S 60 11.3			
15	218 20.7	76 40.9	31.8	21 09.9	58.8		278 41.2	19.9	283 04.6	38.5			Hamal	328 44.7	N 23 16.9			
16	233 23.2	91 40.4	30.9	36 10.8	59.5		293 43.8	19.9	298 07.1	38.5			Kaus Aust.	84 35.6	S 34 24.2			
17	248 25.7	106 39.8	30.1	51 11.8	7 00.1		308 46.3	19.9	313 09.6	38.5								
18	263 28.1	121 39.3	N15 29.3	66 12.7	S 7 00.8		323 48.8	S21 19.9	328 12.1	S21 38.5			Kochab	137 19.1	N 74 19.1			
19	278 30.6	136 38.7	28.5	81 13.6	01.4		338 51.4	19.9	343 14.7	38.6			Markab	14 17.0	N 15 00.0			
20	293 33.1	151 38.2	27.6	96 14.6	02.1		353 53.9	19.9	358 17.2	38.6			Menkar	314 55.8	N 3 56.4			
21	308 35.5	166 37.7	26.8	111 15.5	02.7		8 56.5	19.9	13 19.7	38.6			Menkent	148 54.1	S 36 10.8			
22	323 38.0	181 37.1	26.0	126 16.4	03.4		23 59.0	20.0	28 22.2	38.6			Miaplacidus	221 48.7	S 69 33.4			
23	338 40.5	196 36.6	25.2	141 17.4	04.0		39 01.5	20.0	43 24.7	38.6								
15 00	353 42.9	211 36.1	N15 24.3	156 18.3	S 7 04.7		54 04.1	S21 20.0	58 27.3	S21 38.6			Mirfak	309 36.2	N 49 43.3			
01	8 45.4	226 35.5	23.5	171 19.2	05.3		69 06.6	20.0	73 29.8	38.6			Nunki	76 46.7	S 26 20.7			
02	23 47.9	241 35.0	22.7	186 20.2	06.0		84 09.1	20.0	88 32.3	38.6			Peacock	54 20.5	S 56 51.6			
03	38 50.3	256 34.4	21.8	201 21.1	06.6		99 11.7	20.0	103 34.8	38.6			Pollux	244 15.8	N 28 07.1			
04	53 52.8	271 33.9	21.0	216 22.0	07.3		114 14.2	20.0	118 37.3	38.7			Procyon	245 40.9	N 5 19.5			
05	68 55.2	286 33.4	20.2	231 23.0	08.0		129 16.8	20.1	133 39.9	38.7								
06	83 57.7	301 32.8	N15 19.3	246 23.9	S 7 08.6		144 19.3	S21 20.1	148 42.4	S21 38.7			Rasalhague	96 42.8	N 12 35.5			
07	99 00.2	316 32.3	18.5	261 24.8	09.3		159 21.8	20.1	163 44.9	38.7			Regulus	208 25.5	N 12 09.4			
08	114 02.6	331 31.8	17.7	276 25.8	09.9		174 24.4	20.1	178 47.4	38.7			Rigel	281 49.7	S 8 14.6			
09	129 05.1	346 31.2	16.8	291 26.7	10.6		189 26.9	20.1	193 49.9	38.7			Rigel Kent.	140 45.7	S 60 40.7			
10	144 07.6	1 30.7	16.0	306 27.6	11.2		204 29.4	20.1	208 52.4	38.7			Sabik	102 57.5	S 15 40.6			
11	159 10.0	16 30.2	15.2	321 28.6	11.9		219 32.0	20.1	223 55.0	38.7								
12	174 12.5	31 29.6	N15 14.3	336 29.5	S 7 12.5		234 34.5	S21 20.2	238 57.5	S21 38.8			Schedar	350 24.6	N 56 19.6			
13	189 15.0	46 29.1	13.5	351 30.4	13.2		249 37.0	20.2	254 00.0	38.8			Shaula	97 15.1	S 37 04.6			
14	204 17.4	61 28.6	12.6	6 31.4	13.8		264 39.6	20.2	269 02.5	38.8			Sirius	259 08.4	S 16 39.6			
15	219 19.9	76 28.0	11.8	21 32.3	14.5		279 42.1	20.2	284 05.0	38.8			Spica	159 12.8	S 10 57.5			
16	234 22.4	91 27.5	11.0	36 33.2	15.1		294 44.6	20.2	299 07.5	38.8			Suhail	223 21.6	S 43 16.4			
17	249 24.8	106 27.0	10.1	51 34.2	15.8		309 47.2	20.2	314 10.1	38.8								
18	264 27.3	121 26.4	N15 09.3	66 35.1	S 7 16.4		324 49.7	S21 20.2	329 12.6	S21 38.8			Vega	81 05.3	N 38 45.2			
19	279 29.7	136 25.9	08.4	81 36.0	17.1		339 52.2	20.2	344 15.1	38.8			Zuben'ubi	137 49.0	S 15 52.8			
20	294 32.2	151 25.4	07.6	96 37.0	17.7		354 54.8	20.3	359 17.6	38.8								
21	309 34.7	166 24.9	06.7	111 37.9	18.4		9 57.3	20.3	14 20.1	38.8								
22	324 37.1	181 24.3	05.9	126 38.8	19.0													

G.M.T.		SUN				MOON				Lat.	Twilight		Sun-rise	Moonrise													
		G.H.A.		Dec.		G.H.A.		Dec.			Civil			13		15		16									
d	h	°	'	°	'	°	'	°	'	°	'	h	m	h	m	h	m	h	m	h	m	h	m	h	m	h	m
WEDNESDAY	13 00	180	58.1	N	3 58.5	149	44.8	14.2	S	4 36.0	9.9	55.1	N 72	01 56	03 48	05 01	09 37	11 21	13 13	15 21							
	01	195	58.3		57.6	164	18.0	14.2		4 45.9	9.8	55.1	N 70	02 31	04 02	05 07	09 28	11 04	12 45	14 29							
	02	210	58.5		56.6	178	51.2	14.1		4 55.7	9.9	55.2	68	02 55	04 13	05 12	09 20	10 51	12 23	13 57							
	03	225	58.8		55.7	193	24.3	14.1		5 05.6	9.8	55.2	66	03 13	04 23	05 16	09 14	10 40	12 07	13 33							
	04	240	59.0		54.7	207	57.4	14.0		5 15.4	9.8	55.2	64	03 28	04 30	05 19	09 09	10 30	11 53	13 15							
	05	255	59.2		53.7	222	30.4	14.1		5 25.2	9.8	55.2	62	03 40	04 37	05 22	09 04	10 22	11 42	13 00							
	06	270	59.4	N	3 52.8	237	03.5	13.9	S	5 35.0	9.8	55.2	N 58	03 58	04 47	05 27	08 57	10 10	11 23	12 36							
	07	285	59.6		51.8	251	36.4	14.0		5 44.8	9.7	55.3	56	04 05	04 51	05 29	08 54	10 05	11 16	12 29							
	08	300	59.9		50.9	266	09.4	13.9		5 54.5	9.7	55.3	54	04 12	04 55	05 31	08 51	10 00	11 09	12 19							
	09	316	00.1		49.9	280	42.3	13.9		6 04.2	9.8	55.3	52	04 17	04 58	05 32	08 49	09 56	11 04	12 11							
	10	331	00.3		49.0	295	15.2	13.9		6 14.0	9.6	55.3	50	04 22	05 01	05 34	08 46	09 52	10 58	12 05							
	11	346	00.5		48.0	309	48.1	13.8		6 23.6	9.7	55.3	45	04 32	05 07	05 37	08 41	09 44	10 47	11 50							
	12		1 00.7	N	3 47.0	324	20.9	13.7	S	6 33.3	9.7	55.4	N 40	04 40	05 12	05 40	08 37	09 37	10 37	11 39							
	13		16 01.0		46.1	338	53.6	13.8		6 43.0	9.6	55.4	35	04 47	05 16	05 42	08 34	09 31	10 29	11 29							
	14		31 01.2		45.1	353	26.4	13.7		6 52.6	9.6	55.4	30	04 52	05 20	05 44	08 31	09 26	10 22	11 20							
	15		46 01.4		44.2	7 59.1	13.6			7 02.2	9.5	55.4	20	04 59	05 25	05 47	08 25	09 17	10 10	11 05							
	16		61 01.6		43.2	22 31.7	13.7			7 11.7	9.6	55.4	N 10	05 04	05 29	05 50	08 21	09 09	09 59	10 52							
	17		76 01.8		42.2	37 04.4	13.5			7 21.3	9.5	55.4	0	05 08	05 32	05 52	08 16	09 02	09 49	10 40							
	18		91 02.1	N	3 41.3	51 36.9	13.6	S	7 30.8	9.5	55.5	S 10	05 09	05 34	05 55	08 12	08 55	09 39	10 27								
	19		106 02.3		40.3	66 09.5	13.5			7 40.3	9.4	55.5	20	05 10	05 35	05 57	08 07	08 47	09 29	10 14							
	20		121 02.5		39.4	80 42.0	13.4			7 49.7	9.5	55.5	30	05 08	05 36	06 00	08 02	08 38	09 17	10 00							
	21		136 02.7		38.4	95 14.4	13.4			7 59.2	9.4	55.5	35	05 07	05 36	06 01	07 59	08 33	09 10	09 51							
	22		151 02.9		37.5	109 46.8	13.4			8 08.6	9.3	55.6	40	05 05	05 36	06 03	07 56	08 28	09 03	09 42							
	23		166 03.2		36.5	124 19.2	13.3			8 17.9	9.4	55.6	45	05 02	05 36	06 05	07 52	08 21	08 54	09 30							
THURSDAY	14 00	181	03.4	N	3 35.5	138	51.5	13.3	S	8 27.3	9.3	55.6	S 50	04 58	05 35	06 07	07 47	08 13	08 43	09 17							
	01	196	03.6		34.6	153	23.8	13.2		8 36.6	9.3	55.6	52	04 55	05 35	06 08	07 45	08 10	08 38	09 10							
	02	211	03.8		33.6	167	56.0	13.2		8 45.9	9.2	55.6	54	04 53	05 34	06 09	07 43	08 06	08 32	09 03							
	03	226	04.0		32.7	182	28.2	13.2		8 55.1	9.2	55.7	56	04 50	05 34	06 10	07 40	08 02	08 26	08 56							
	04	241	04.3		31.7	197	00.4	13.1		9 04.3	9.2	55.7	58	04 47	05 33	06 12	07 38	07 57	08 19	08 47							
	05	256	04.5		30.7	211	32.5	13.0		9 13.5	9.1	55.7	S 60	04 43	05 32	06 13	07 34	07 51	08 12	08 37							
	06	271	04.7	N	3 29.8	226	04.5	13.0	S	9 22.6	9.1	55.7															
	07	286	04.9		28.8	240	36.5	12.9		9 31.7	9.1	55.7															
	08	301	05.1		27.9	255	08.4	13.0		9 40.8	9.0	55.8	Lat.	Sun-set	Twilight		Moonset										
	09	316	05.4		26.9	269	40.4	12.8		9 49.8	9.0	55.8															
	10	331	05.6		25.9	284	12.2	12.8		9 58.8	8.9	55.8															
	11	346	05.8		25.0	298	44.0	12.8		10 07.7	8.9	55.8															
	12		1 06.0	N	3 24.0	313	15.8	12.7	S 10	16.6	8.9	55.9	N 70	18 42	19 46	21 15	19 07	19 05	19 05	19 06							
	13		16 06.2		23.1	327	47.5	12.6		10 25.5	8.8	55.9	68	18 37	19 35	20 52	19 16	19 20	19 27	19 38							
	14		31 06.5		22.1	342	19.1	12.6		10 34.3	8.8	55.9	66	18 33	19 26	20 35	19 24	19 32	19 44	20 02							
	15		46 06.7		21.1	356	50.7	12.5		10 43.1	8.7	55.9	64	18 30	19 19	20 20	19 30	19 43	19 59	20 21							
	16		61 06.9		20.2	11 22.2	12.5			10 51.8	8.7	55.9	62	18 27	19 13	20 09	19 36	19 52	20 11	20 37							
	17		76 07.1		19.2	25 53.7	12.5			11 00.5	8.7	56.0	60	18 25	19 07	20 00	19 41	19 59	20 21	20 50							
	18		91 07.3	N	3 18.3	40 25.2	12.4	S 11	09.2	8.5	56.0	N 58	18 23	19 03	19 51	19 45	20 06	20 30	21 01								
	19		106 07.6		17.3	54 56.6	12.3			11 17.7	8.6	56.0	56	18 21	18 59	19 44	19 49	20 12	20 38	21 11							
	20		121 07.8		16.3	69 27.9	12.3			11 26.3	8.5	56.0	54	18 19	18 55	19 38	19 53	20 17	20 45	21 20							
	21		136 08.0		15.4	83 59.2	12.2			11 34.8	8.4	56.1	52	18 18	18 52	19 33	19 56	20 22	20 52	21 27							
	22		151 08.2		14.4	98 30.4	12.1			11 43.2	8.4	56.1	50	18 16	18 49	19 28	19 59	20 26	20 57	21 34							
	23		166 08.4		13.5	113 01.5	12.1			11 51.6	8.4	56.1	45	18 13	18 43	19 18	20 05	20 35	21 10	21 49							
FRIDAY	15 00	181	08.7	N	3 12.5	127	32.6	12.1	S 12	00.0	8.3	56.1	N 40	18 11	18 38	19 10	20 10	20 43	21 20	22 02							
	01	196	08.9		11.5	142	03.7	12.0		12 08.3	8.2	56.2	35	18 09	18 34	19 04	20 15	20 50	21 29	22 12							
	02	211	09.1		10.6	156	34.7	11.9		12 16.5	8.2	56.2	30	18 07	18 31	18 59	20 19	20 56	21 37	22 21							
	03	226	09.3		09.6	171	05.6	11.9		12 24.7	8.2	56.2	20	18 04	18 26	18 52	20 26	21 07	21 50	22 37							
	04	241	09.6		08.7	185	36.5	11.8		12 32.9	8.0	56.2	N 10	18 01	18 22	18 47	20 32	21 16									

		ARIES		VENUS -3.4		MARS +1.9		JUPITER -2.1		SATURN +0.6		STARS			
G.M.T.		G.H.A.		G.H.A. Dec.		G.H.A. Dec.		G.H.A. Dec.		G.H.A. Dec.		Name S.H.A. Dec.			
SATURDAY	16 00	354 42.1	211 23.3	N15 04.2	156 40.7	S 7 20.3	55 04.9	S21 20.3	59 27.7	S21 38.9	Acamar	315 47.8	S 40 27.3		
	01	9 44.5	226 22.7	03.4	171 41.6	21.0	70 07.4	20.3	74 30.2	38.9	Achernar	335 55.4	S 57 25.8		
	02	24 47.0	241 22.2	02.5	186 42.5	21.6	85 09.9	20.3	89 32.7	38.9	Acruz	173 53.7	S 62 53.2		
	03	39 49.5	256 21.7	01.7	201 43.5	22.3	100 12.5	20.3	104 35.2	38.9	Adhara	255 43.4	S 28 55.0		
	04	54 51.9	271 21.2	00.8	216 44.4	22.9	115 15.0	20.4	119 37.7	38.9	Aldebaran	291 34.3	N 16 25.9		
	05	69 54.4	286 20.6	15 00.0	231 45.3	23.6	130 17.5	20.4	134 40.2	38.9					
	06	84 56.9	301 20.1	N14 59.1	246 46.3	S 7 24.2	145 20.1	S21 20.4	149 42.7	S21 38.9	Alioth	166 55.6	N 56 10.3		
	07	99 59.3	316 19.6	58.3	261 47.2	24.9	160 22.6	20.4	164 45.2	39.0	Alkaid	153 30.1	N 49 30.6		
	08	115 01.8	331 19.0	57.4	276 48.1	25.5	175 25.1	20.4	179 47.8	39.0	Al Na'ir	28 32.4	S 47 08.8		
	09	130 04.2	346 18.5	56.5	291 49.1	26.2	190 27.6	20.4	194 50.3	39.0	Alnilam	276 26.1	S 1 13.5		
SUNDAY	10	145 06.7	1 18.0	55.7	306 50.0	26.8	205 30.2	20.4	209 52.8	39.0	Alphard	218 34.8	S 8 29.4		
	11	160 09.2	16 17.5	54.8	321 50.9	27.4	220 32.7	20.4	224 55.3	39.0					
	12	175 11.6	31 16.9	N14 54.0	336 51.8	S 7 28.1	235 35.2	S21 20.5	239 57.8	S21 39.0	Alphecca	126 44.4	N 26 50.9		
	13	190 14.1	46 16.4	53.1	351 52.8	28.7	250 37.7	20.5	255 00.3	39.0	Alpheratz	358 23.7	N 28 52.8		
	14	205 16.6	61 15.9	52.3	6 53.7	29.4	265 40.3	20.5	270 02.8	39.0	Altair	62 46.2	N 8 46.2		
	15	220 19.0	76 15.4	51.4	21 54.6	30.0	280 42.8	20.5	285 05.4	39.0	Ankaa	353 53.9	S 42 30.7		
	16	235 21.5	91 14.8	50.5	36 55.6	30.7	295 45.3	20.5	300 07.9	39.0	Antares	113 14.4	S 26 20.8		
	17	250 24.0	106 14.3	49.7	51 56.5	31.3	310 47.8	20.5	315 10.4	39.1					
	18	265 26.4	121 13.8	N14 48.8	66 57.4	S 7 32.0	325 50.4	S21 20.5	330 12.9	S21 39.1	Arcturus	146 31.7	N 19 23.2		
	19	280 28.9	136 13.3	48.0	81 58.3	32.6	340 52.9	20.5	345 15.4	39.1	Atria	108 51.5	S 68 57.7		
MONDAY	20	295 31.3	151 12.7	47.1	96 59.3	33.3	355 55.4	20.5	0 17.9	39.1	Avior	234 34.4	S 59 22.9		
	21	310 33.8	166 12.2	46.2	112 00.2	33.9	10 57.9	20.6	15 20.4	39.1	Bellatrix	279 14.0	N 6 19.0		
	22	325 36.3	181 11.7	45.4	127 01.1	34.6	26 00.4	20.6	30 22.9	39.1	Betelgeuse	271 43.7	N 7 24.0		
	23	340 38.7	196 11.2	44.5	142 02.1	35.2	41 03.0	20.6	45 25.4	39.1					
	17 00	355 41.2	211 10.7	N14 43.6	157 03.0	S 7 35.9	56 05.5	S21 20.6	60 28.0	S21 39.1	Canopus	264 13.6	S 52 40.2		
	01	10 43.7	226 10.1	42.8	172 03.9	36.5	71 08.0	20.6	75 30.5	39.1	Capella	281 32.3	N 45 57.4		
	02	25 46.1	241 09.6	41.9	187 04.8	37.2	86 10.5	20.6	90 33.0	39.1	Deneb	49 57.8	N 45 08.9		
	03	40 48.6	256 09.1	41.0	202 05.8	37.8	101 13.0	20.6	105 35.5	39.2	Denebola	183 13.9	N 14 47.4		
	04	55 51.1	271 08.6	40.2	217 06.7	38.5	116 15.6	20.6	120 38.0	39.2	Diphda	349 34.8	S 18 11.7		
	05	70 53.5	286 08.0	39.3	232 07.6	39.1	131 18.1	20.6	135 40.5	39.2					
TUESDAY	06	85 56.0	301 07.5	N14 38.4	247 08.5	S 7 39.8	146 20.6	S21 20.6	150 43.0	S21 39.2	Dubhe	194 40.3	N 61 57.5		
	07	100 58.5	316 07.0	37.6	262 09.5	40.4	161 23.1	20.7	165 45.5	39.2	Elath	279 02.1	N 28 34.5		
	08	116 00.9	331 06.5	36.7	277 10.4	41.1	176 25.6	20.7	180 48.0	39.2	Elnatan	91 04.3	N 51 30.0		
	09	131 03.4	346 06.0	35.8	292 11.3	41.7	191 28.2	20.7	195 50.5	39.2	Enif	34 25.3	N 9 42.1		
	10	146 05.8	1 05.4	34.9	307 12.2	42.4	206 30.7	20.7	210 53.1	39.2	Fomalhaut	16 06.8	S 29 49.5		
	11	161 08.3	16 04.9	34.1	322 13.2	43.0	221 33.2	20.7	225 55.6	39.2					
	12	176 10.8	31 04.4	N14 33.2	337 14.1	S 7 43.7	236 35.7	S21 20.7	240 58.1	S21 39.2	Gacrux	172 45.1	S 56 53.8		
	13	191 13.2	46 03.9	32.3	352 15.0	44.3	251 38.2	20.7	256 00.6	39.3	Gienah	176 32.9	S 17 19.6		
	14	206 15.7	61 03.4	31.4	7 15.9	45.0	266 40.7	20.7	271 03.1	39.3	Hadar	149 44.0	S 60 11.3		
	15	221 18.2	76 02.9	30.6	22 16.9	45.6	281 43.3	20.7	286 05.6	39.3	Hamal	328 44.7	N 23 16.9		
WEDNESDAY	16	236 20.6	91 02.3	29.7	37 17.8	46.2	296 45.8	20.7	301 08.1	39.3	Kaus Aust.	84 35.7	S 34 24.2		
	17	251 23.1	106 01.8	28.8	52 18.7	46.9	311 48.3	20.8	316 10.6	39.3					
	18	266 25.6	121 01.3	N14 27.9	67 19.6	S 7 47.5	326 50.8	S21 20.8	331 13.1	S21 39.3	Kochab	137 19.1	N 74 19.1		
	19	281 28.0	136 00.8	27.0	82 20.6	48.2	341 53.3	20.8	346 15.6	39.3	Markab	14 17.0	N 15 00.0		
	20	296 30.5	151 00.3	26.2	97 21.5	48.8	356 55.8	20.8	1 18.1	39.3	Menkar	314 55.8	N 3 56.4		
	21	311 33.0	165 59.7	25.3	112 22.4	49.5	11 58.3	20.8	16 20.6	39.3	Menkent	148 54.1	S 36 10.8		
	22	326 35.4	180 59.2	24.4	127 23.3	50.1	27 00.9	20.8	31 23.1	39.3	Miaplacidus	221 48.7	S 69 33.4		
	23	341 37.9	195 58.7	23.5	142 24.2	50.8	42 03.4	20.8	46 25.6	39.4					
	18 00	356 40.3	210 58.2	N14 22.6	157 25.2	S 7 51.4	57 05.9	S21 20.8	61 28.2	S21 39.4	Mirfak	309 36.2	N 49 43.3		
	01	11 42.8	225 57.7	21.8	172 26.1	52.1	72 08.4	20.8	76 30.7	39.4	Nunki	76 46.7	S 26 20.7		
THURSDAY	02	26 45.3	240 57.2	20.9	187 27.0	52.7	87 10.9	20.8	91 33.2	39.4	Peacock	54 20.5	S 56 51.6		
	03	41 47.7	255 56.7	20.0	202 27.9	53.4	102 13.4	20.8	106 35.7	39.4	Pollux	244 15.8	N 28 07.1		
	04	56 50.2	270 56.1	19.1	217 28.9	54.0	117 15.9	20.9	121 38.2	39.4	Procyon	245 40.9	N 5 19.5		
	05	71 52.7	285 55.6	18.2	232 29.8	54.7	132 18.4	20.9	136 40.7	39.4					
	06	86 55.1	300 55.1	N14 17.3	247 30.7	S 7 55.3	147 21.0	S21 20.9	151 43.2	S21 39.4	Rasalhague	96 42.8	N 12 35.5		
	07	101 57.6	315 54.6	16.4	262 31.6	55.9	162 23.5	20.9	166 45.7	39.4	Regulus	208 25.5	N 12 09.4		
	08	117 00.1	330 54.1	15.6	277 32.5	56.6	177 26.0	20.9	181 48.2	39.4	Rigel	281 49.7	S 8 14.6		
	09	132 02.5	345 53.6	14.7	292 33.5	57.2	192 28.5	20.9	196 50.7	39.4	Rigel Kent.	140 45.7	S 60 40.6		
	10	147 05.0	0 53.1	13.8	307 34.4	57.9	207 31.0	20.9	211 53.2	39.5	Sabik	102 57.5	S 15 40.6		
	11	162 07.4	15 52.5	12.9	322 35.3	58.5	222 33.5	20.9	226 55.7	39.5					
FRIDAY	12	177 09.9	30 52.0	N14 12.0	337 36.2	S 7 59.2	237 36.0	S21 20.9	241 58.2	S21 39.5	Schedar	350 24.6	N 56 19.6		
	13	192 12.4	45 51.5	11.1	352 37.1	7 59.8	252 38.5	20.9	257 00.7	39.5	Shaula	97 15.1	S 37 04.6		
	14	207 14.8	60 51.0	10.2	7 38.1	8 00.5	267 41.0	20.9	272 03.2	39.5	Sirius	259 08.4	S 16 39.6		
	15	222 17.3	75 50.5	09.3	22 39.0	01.1	282 43.5	20.9	287 05.7	39.5	Spica	159 12.8	S 10 57.5		
	16	237 19.8	90 50.0	08.4	37 39.9	01.8	297 46.0	21.0	302 08.2	39.5	Suhail	223 21.6	S 43 16.4		
	17	252 22.2	105 49.5	07.5	52 40.8	02.4	312 48.5	21.0	317 10.7	39.5					
	18	267 24.7	120 49.0	N14 06.6	67 41.7	S 8 03.1	327 51.1	S21 21.0	332 13.2	S21 39.5	Vega	81 05.4	N 38 45.2		
	19	282 27.2	135 48.5	05.7	82 42.7	03.7	342 53.6	21.0	347 15.7	39.5	Zuben'ubi	137 49.0	S 15 52.8		
	20	297 29.6	150 48.0	04.8	97 43.6	04.4	357 56.1	21.0	2 18.2	39.5		S.H.A.	Mer. Pass.		
	21	312 32.1	165 47.4	03.9	112 44.5	05.0	12 58.6	21.0	17 20.7	39.5					
SATURDAY	22	327 34.6	180 46.9	03.0	127 45.4	05.6	28 01.1	21.0	32 23.2	39.6	Venus	215 29.5	9 56		
	23	342 37.0	195 46.4	02.1	142 46.3	06.3	43 03.6	21.0	47 25.7	39.6	Mars	161 21.8	13 31		
											Jupiter	60 24.3	20 12		
Mer. Pass.		0 17.2		v -0.5 d 0.9		v 0.9 d 0.6		v 2.5 d 0.0		v 2.5 d 0.0		Saturn		64 46.8	19 55

Mer. Pass. 0 17.2

h m

v -0.5 d 0.9

v 0.9 d 0.6

v 2.5 d 0.0

v 2.5 d 0.0

G.M.T.	SUN		MOON					Lat.	Twilight		Sun-rise	Moonrise							
	G.H.A.	Dec.	G.H.A.	v	Dec.	d	H.P.		Naut.	Civil		16	17	18	19				
d h	°	'	°	'	°	'	'	°	h m	h m	h m	h m	h m	h m	h m	h m			
16 00	181	14.0	N 2	49.4	115	41.0	10.6	S 15	02.9	6.8	56.8	N 70	02 49	04 16	05 19	14 29	16 14	17 41	18 17
01	196	14.2		48.4	130	10.6	10.5		15 09.7	6.7	56.8	68	03 10	04 25	05 22	13 57	15 26	16 40	17 27
02	211	14.4		47.5	144	40.1	10.4		15 16.4	6.7	56.8	66	03 26	04 33	05 25	13 33	14 55	16 05	16 55
03	226	14.7		46.5	159	09.5	10.4		15 23.1	6.6	56.8	64	03 39	04 39	05 28	13 15	14 32	15 40	16 32
04	241	14.9		45.5	173	38.9	10.3		15 29.7	6.5	56.9	62	03 49	04 45	05 30	13 00	14 14	15 20	16 13
05	256	15.1		44.6	188	08.2	10.2		15 36.2	6.4	56.9	60	03 58	04 50	05 32	12 47	13 59	15 04	15 58
06	271	15.3	N 2	43.6	202	37.4	10.2	S 15	42.6	6.3	56.9	N 58	04 05	04 54	05 33	12 36	13 46	14 50	15 45
07	286	15.5		42.7	217	06.6	10.1		15 48.9	6.3	57.0	56	04 12	04 57	05 35	12 27	13 35	14 38	15 33
08	301	15.8		41.7	231	35.7	10.0		15 55.2	6.2	57.0	54	04 18	05 00	05 36	12 19	13 26	14 28	15 23
09	316	16.0		40.7	246	04.7	10.0		16 01.4	6.1	57.0	52	04 23	05 03	05 37	12 11	13 17	14 19	15 14
10	331	16.2		39.8	260	33.7	9.9		16 07.5	6.0	57.0	50	04 27	05 06	05 38	12 05	13 09	14 11	15 06
11	346	16.4		38.8	275	02.6	9.8		16 13.5	6.0	57.1	45	04 36	05 11	05 41	11 50	12 53	13 53	14 50
12	1	16.7	N 2	37.8	289	31.4	9.8	S 16	19.5	5.8	57.1	N 40	04 43	05 15	05 42	11 39	12 40	13 39	14 36
13	16	16.9		36.9	304	00.2	9.7		16 25.3	5.8	57.1	35	04 49	05 19	05 44	11 29	12 28	13 27	14 24
14	31	17.1		35.9	318	28.9	9.6		16 31.1	5.7	57.2	30	04 53	05 21	05 45	11 20	12 19	13 17	14 14
15	46	17.3		34.9	332	57.5	9.6		16 36.8	5.6	57.2	20	05 00	05 26	05 48	11 05	12 01	12 59	13 56
16	61	17.5		34.0	347	26.1	9.5		16 42.4	5.5	57.2	N 10	05 04	05 29	05 50	10 52	11 47	12 43	13 41
17	76	17.8		33.0	1	54.6	9.4		16 47.9	5.5	57.2	0	05 07	05 31	05 51	10 40	11 33	12 28	13 26
18	91	18.0	N 2	32.0	16	23.0	9.4	S 16	53.4	5.3	57.3	S 10	05 08	05 32	05 53	10 27	11 19	12 14	13 11
19	106	18.2		31.1	30	51.4	9.3		16 58.7	5.3	57.3	20	05 07	05 32	05 54	10 14	11 04	11 58	12 56
20	121	18.4		30.1	45	19.7	9.2		17 04.0	5.1	57.3	30	05 05	05 32	05 56	10 00	10 47	11 40	12 38
21	136	18.6		29.1	59	47.9	9.2		17 09.1	5.1	57.4	35	05 03	05 32	05 57	09 51	10 38	11 30	12 28
22	151	18.9		28.2	74	16.1	9.1		17 14.2	5.0	57.4	40	05 00	05 31	05 58	09 42	10 26	11 18	12 16
23	166	19.1		27.2	88	44.2	9.0		17 19.2	4.9	57.4	45	04 56	05 30	05 59	09 30	10 13	11 04	12 03
17 00	181	19.3	N 2	26.2	103	12.2	9.0	S 17	24.1	4.8	57.5	S 50	04 51	05 28	06 00	09 17	09 58	10 47	11 46
01	196	19.5		25.3	117	40.2	8.9		17 28.9	4.7	57.5	52	04 48	05 28	06 01	09 10	09 50	10 39	11 38
02	211	19.8		24.3	132	08.1	8.9		17 33.6	4.6	57.5	54	04 45	05 27	06 02	09 03	09 42	10 30	11 29
03	226	20.0		23.3	146	36.0	8.7		17 38.2	4.5	57.6	56	04 42	05 26	06 03	08 56	09 33	10 20	11 19
04	241	20.2		22.4	161	03.7	8.7		17 42.7	4.4	57.6	58	04 38	05 24	06 03	08 47	09 22	10 08	11 07
05	256	20.4		21.4	175	31.4	8.7		17 47.1	4.3	57.6	S 60	04 34	05 23	06 04	08 37	09 10	09 55	10 54
06	271	20.6	N 2	20.5	189	59.1	8.6	S 17	51.4	4.2	57.6	Lat.				Sun-set			
07	286	20.9		19.5	204	26.7	8.5		17 55.6	4.2	57.7	Civil		Naut.		Moonset			
08	301	21.1		18.5	218	54.2	8.4		17 59.8	4.0	57.7					16	17	18	19
09	316	21.3		17.6	233	21.6	8.4		18 03.8	3.9	57.7	h m	h m	h m	h m	h m	h m	h m	h m
10	331	21.5		16.6	247	49.0	8.3		18 07.7	3.8	57.8	N 72	18 32	19 42	21 21	18 12	■	■	■
11	346	21.8		15.6	262	16.3	8.3		18 11.5	3.7	57.8	N 70	18 28	19 31	20 55	19 06	19 12	19 43	21 08
12	1	22.0	N 2	14.7	276	43.6	8.2	S 18	15.2	3.6	57.8	68	18 24	19 21	20 35	19 38	20 00	20 44	21 58
13	16	22.2		13.7	291	10.8	8.1		18 18.8	3.5	57.9	66	18 22	19 14	20 20	20 02	20 31	21 19	22 29
14	31	22.4		12.7	305	37.9	8.1		18 22.3	3.4	57.9	64	18 20	19 08	20 08	20 21	20 55	21 44	22 52
15	46	22.6		11.8	320	05.0	8.0		18 25.7	3.3	57.9	62	18 18	19 03	19 58	20 37	21 13	22 04	23 10
16	61	22.9		10.8	334	32.0	8.0		18 29.0	3.2	58.0	60	18 16	18 58	19 49	20 50	21 28	22 20	23 26
17	76	23.1		09.8	348	59.0	7.9		18 32.2	3.1	58.0	N 58	18 14	18 54	19 42	21 01	21 41	22 33	23 39
18	91	23.3	N 2	08.8	3	25.9	7.8	S 18	35.3	3.0	58.0	56	18 13	18 50	19 36	21 11	21 53	22 45	23 50
19	106	23.5		07.9	17	52.7	7.8		18 38.3	2.8	58.0	54	18 12	18 47	19 30	21 20	22 02	22 56	24 00
20	121	23.8		06.9	32	19.5	7.7		18 41.1	2.8	58.1	52	18 11	18 45	19 25	21 27	22 11	23 05	24 08
21	136	24.0		05.9	46	46.2	7.7		18 43.9	2.6	58.1	50	18 10	18 42	19 21	21 34	22 19	23 13	24 16
22	151	24.2		05.0	61	12.9	7.6		18 46.5	2.6	58.1	45	18 08	18 37	19 12	21 49	22 36	23 30	24 33
23	166	24.4		04.0	75	39.5	7.5		18 49.1	2.4	58.2	N 40	18 06	18 33	19 05	22 02	22 50	23 45	24 46
18 00	181	24.6	N 2	03.0	90	06.0	7.5	S 18	51.5	2.3	58.2	35	18 05	18 30	18 59	22 12	23 01	23 57	24 58
01	196	24.9		02.1	104	32.5	7.4		18 53.8	2.2	58.2	30	18 03	18 27	18 55	22 21	23 11	24 07	00 07
02	211	25.1		01.1	118	58.9	7.4		18 56.0	2.1	58.3	20	18 01	18 23	18 49	22 37	23 29	24 25	00 25
03	226	25.3		00.1	133	25.3	7.3		18 58.1	1.9	58.3	N 10	17 59	18 20	18 45	22 52	23 45	24 41	00 41
04	241	25.5		59.2	147	51.6	7.3		19 00.0	1.9	58.3	0	17 58	18 18	18 43	23 05	23 59	24 56	00 56
05	256	25.8		58.2	162	17.9	7.2		19 01.9	1.7	58.4	S 10	17 56	18 17	18 42	23 18	24 13	00 13	01 10
06	271	26.0	N 1	57.2	176	44.1	7.2	S 19	03.6	1.6	58.4	20	17 55	18 17	18 42	23 32	24 29	00 29	01 26
07	286	26.2		56.3	191	10.3	7.1		19 05.2	1.5	58.4	30	17 53	18 17	18 45	23 48	24 46	00 46	01 44
08	301	26.4		55.3	205	36.4	7.0		19 06.7	1.4	58.5	35	17 53	18 18	18 47	23 57	24 56	00 56	01 54
09	316	26.6		54.3	220	02.4	7.0		19 08.1	1.3	58.5	40	17 52	18 19	18 50	24 08	00 08	01 08	02 06
10	331	26.9		53.4	234	28.4	7.0		19 09.4	1.1	58.5	45	17 51	18 20	18 54	24 20	00 20	01 22	02 20
11	346	27																	

G.M.T.	ARIES		VENUS -3.4		MARS +1.9		JUPITER -2.1		SATURN +0.6		STARS		
	G.H.A.		G.H.A.	Dec.	G.H.A.	Dec.	G.H.A.	Dec.	G.H.A.	Dec.	Name	S.H.A.	Dec.
^d ^h 1900	357 39.5		210 45.9	N14 01.2	157 47.3	S 8 06.9	58 06.1	S21 21.0	62 28.2	S21 39.6	Acamar	315 47.8	S 40 27.3
01	12 41.9		225 45.4	14 00.3	172 48.2	07.6	73 08.6	21.0	77 30.7	39.6	Achernar	335 55.4	S 57 25.8
02	27 44.4		240 44.9	13 59.4	187 49.1	08.2	88 11.1	21.0	92 33.2	39.6	Acruz	173 53.7	S 62 53.1
03	42 46.9		255 44.4	.. 58.5	202 50.0	.. 08.9	103 13.6	.. 21.0	107 35.7	.. 39.6	Adhara	255 43.4	S 28 55.0
04	57 49.3		270 43.9	57.6	217 50.9	09.5	118 16.1	21.1	122 38.2	39.6	Aldebaran	291 34.2	N 16 25.9
05	72 51.8		285 43.4	56.7	232 51.9	10.2	133 18.6	21.1	137 40.7	39.6			
06	87 54.3		300 42.9	N13 55.8	247 52.8	S 8 10.8	148 21.1	S21 21.1	152 43.2	S21 39.6	Alioth	166 55.6	N 56 10.3
07	102 56.7		315 42.4	54.9	262 53.7	11.5	163 23.6	21.1	167 45.7	39.6	Alkaid	153 30.1	N 49 30.5
08	117 59.2		330 41.9	54.0	277 54.6	12.1	178 26.1	21.1	182 48.2	39.6	Al Na'ir	28 32.4	S 47 08.8
09	133 01.7		345 41.4	.. 53.1	292 55.5	.. 12.7	193 28.6	.. 21.1	197 50.7	.. 39.6	Anilam	276 26.1	S 1 13.5
10	148 04.1		0 40.9	52.2	307 56.4	13.4	208 31.1	21.1	212 53.2	39.7	Alphard	218 34.8	S 8 29.4
11	163 06.6		15 40.3	51.3	322 57.4	14.0	223 33.6	21.1	227 55.7	39.7			
12	178 09.1		30 39.8	N13 50.4	337 58.3	S 8 14.7	238 36.1	S21 21.1	242 58.2	S21 39.7	Alphecca	126 44.4	N 26 50.9
13	193 11.5		45 39.3	49.5	352 59.2	15.3	253 38.6	21.1	258 00.7	39.7	Alpheratz	358 23.7	N 28 52.8
14	208 14.0		60 38.8	48.6	8 00.1	16.0	268 41.1	21.1	273 03.2	39.7	Altair	62 46.3	N 8 46.2
15	223 16.4		75 38.3	.. 47.7	23 01.0	.. 16.6	283 43.6	.. 21.1	288 05.7	.. 39.7	Ankaa	353 53.9	S 42 30.7
16	238 18.9		90 37.8	46.7	38 01.9	17.3	298 46.1	21.1	303 08.2	39.7	Antares	113 14.4	S 26 20.8
17	253 21.4		105 37.3	45.8	53 02.9	17.9	313 48.6	21.1	318 10.7	39.7			
18	268 23.8		120 36.8	N13 44.9	68 03.8	S 8 18.5	328 51.1	S21 21.1	333 13.2	S21 39.7	Arcturus	146 31.7	N 19 23.2
19	283 26.3		135 36.3	44.0	83 04.7	19.2	343 53.6	21.1	348 15.7	39.7	Atria	108 51.5	S 68 57.7
20	298 28.8		150 35.8	43.1	98 05.6	19.8	358 56.1	21.2	3 18.2	39.7	Avior	234 34.4	S 59 22.9
21	313 31.2		165 35.3	.. 42.2	113 06.5	.. 20.5	13 58.6	.. 21.2	18 20.7	.. 39.7	Bellatrix	279 14.0	N 6 19.0
22	328 33.7		180 34.8	41.3	128 07.4	21.1	29 01.1	21.2	33 23.2	39.8	Betelgeuse	271 43.7	N 7 24.0
23	343 36.2		195 34.3	40.3	143 08.4	21.8	44 03.6	21.2	48 25.7	39.8			
2000	358 38.6		210 33.8	N13 39.4	158 09.3	S 8 22.4	59 06.1	S21 21.2	63 28.2	S21 39.8	Canopus	264 13.6	S 52 40.2
01	13 41.1		225 33.3	38.5	173 10.2	23.1	74 08.6	21.2	78 30.7	39.8	Capella	281 32.3	N 45 57.4
02	28 43.6		240 32.8	37.6	188 11.1	23.7	89 11.1	21.2	93 33.2	39.8	Deneb	49 57.8	N 45 08.9
03	43 46.0		255 32.3	.. 36.7	203 12.0	.. 24.3	104 13.5	.. 21.2	108 35.7	.. 39.8	Denebola	183 13.9	N 14 47.3
04	58 48.5		270 31.8	35.8	218 12.9	25.0	119 16.0	21.2	123 38.2	39.8	Diphda	349 34.8	S 18 11.7
05	73 50.9		285 31.3	34.8	233 13.8	25.6	134 18.5	21.2	138 40.7	39.8			
06	88 53.4		300 30.8	N13 33.9	248 14.7	S 8 26.3	149 21.0	S21 21.2	153 43.2	S21 39.8	Dubhe	194 40.3	N 61 57.5
07	103 55.9		315 30.3	33.0	263 15.7	26.9	164 23.5	21.2	168 45.7	39.8	Elmath	279 02.1	N 28 34.5
08	118 58.3		330 29.8	32.1	278 16.6	27.6	179 26.0	21.2	183 48.2	39.8	Eltanin	91 04.3	N 51 30.0
09	134 00.8		345 29.3	.. 31.2	293 17.5	.. 28.2	194 28.5	.. 21.2	198 50.7	.. 39.8	Enif	34 25.3	N 9 42.1
10	149 03.3		0 28.8	30.2	308 18.4	28.8	209 31.0	21.2	213 53.2	39.8	Fomalhaut	16 06.8	S 29 49.5
11	164 05.7		15 28.3	29.3	323 19.3	29.5	224 33.5	21.2	228 55.7	39.9			
12	179 08.2		30 27.8	N13 28.4	338 20.2	S 8 30.1	239 36.0	S21 21.2	243 58.2	S21 39.9	Gacrux	172 45.1	S 56 53.8
13	194 10.7		45 27.3	27.5	353 21.1	30.8	254 38.5	21.2	259 00.7	39.9	Gienah	176 32.9	S 17 19.6
14	209 13.1		60 26.8	26.5	8 22.0	31.4	269 41.0	21.3	274 03.2	39.9	Hadar	149 44.0	S 60 11.3
15	224 15.6		75 26.3	.. 25.6	23 23.0	.. 32.1	284 43.5	.. 21.3	289 05.7	.. 39.9	Hamal	328 44.7	N 23 16.9
16	239 18.0		90 25.8	24.7	38 23.9	32.7	299 45.9	21.3	304 08.2	39.9	Kaus Aust.	84 35.7	S 34 24.2
17	254 20.5		105 25.3	23.7	53 24.8	33.3	314 48.4	21.3	319 10.7	39.9			
18	269 23.0		120 24.8	N13 22.8	68 25.7	S 8 34.0	329 50.9	S21 21.3	334 13.2	S21 39.9	Kochab	137 19.2	N 74 19.1
19	284 25.4		135 24.3	21.9	83 26.6	34.6	344 53.4	21.3	349 15.6	39.9	Markab	14 17.0	N 15 00.0
20	299 27.9		150 23.8	21.0	98 27.5	35.3	359 55.9	21.3	4 18.1	39.9	Menkar	314 55.8	N 3 56.4
21	314 30.4		165 23.3	.. 20.0	113 28.4	.. 35.9	14 58.4	.. 21.3	19 20.6	.. 39.9	Menkent	148 54.1	S 36 10.8
22	329 32.8		180 22.9	19.1	128 29.3	36.6	30 00.9	21.3	34 23.1	39.9	Miaplacidus	221 48.7	S 69 33.4
23	344 35.3		195 22.4	18.2	143 30.2	37.2	45 03.4	21.3	49 25.6	39.9			
2100	359 37.8		210 21.9	N13 17.2	158 31.2	S 8 37.8	60 05.9	S21 21.3	64 28.1	S21 40.0	Mirfak	309 36.2	N 49 43.3
01	14 40.2		225 21.4	16.3	173 32.1	38.5	75 08.3	21.3	79 30.6	40.0	Nunki	76 46.7	S 26 20.7
02	29 42.7		240 20.9	15.4	188 33.0	39.1	90 10.8	21.3	94 33.1	40.0	Peacock	54 20.5	S 56 51.6
03	44 45.2		255 20.4	.. 14.4	203 33.9	.. 39.8	105 13.3	.. 21.3	109 35.6	.. 40.0	Pollux	244 15.8	N 28 07.1
04	59 47.6		270 19.9	13.5	218 34.8	40.4	120 15.8	21.3	124 38.1	40.0	Procyon	245 40.8	N 5 19.5
05	74 50.1		285 19.4	12.6	233 35.7	41.0	135 18.3	21.3	139 40.6	40.0			
06	89 52.5		300 18.9	N13 11.6	248 36.6	S 8 41.7	150 20.8	S21 21.3	154 43.1	S21 40.0	Rasalhague	96 42.8	N 12 35.5
07	104 55.0		315 18.4	10.7	263 37.5	42.3	165 23.2	21.3	169 45.6	40.0	Regulus	208 25.4	N 12 09.4
08	119 57.5		330 17.9	09.7	278 38.4	43.0	180 25.7	21.3	184 48.1	40.0	Rigel	281 49.6	S 8 14.6
09	134 59.9		345 17.4	.. 08.8	293 39.3	.. 43.6	195 28.2	.. 21.3	199 50.5	.. 40.0	Rigel Kent.	140 45.7	S 60 40.6
10	150 02.4		0 16.9	07.9	308 40.2	44.3	210 30.7	21.3	214 53.0	40.0	Sabik	102 57.5	S 15 40.6
11	165 04.9		15 16.4	06.9	323 41.2	44.9	225 33.2	21.3	229 55.5	40.0			
12	180 07.3		30 16.0	N13 06.0	338 42.1	S 8 45.5	240 35.7	S21 21.3	244 58.0	S21 40.0	Schedar	350 24.6	N 56 19.6
13	195 09.8		45 15.5	05.0	353 43.0	46.2	255 38.1	21.3	260 00.5	40.0	Shaula	97 15.1	S 37 04.6
14	210 12.3		60 15.0	04.1	8 43.9	46.8	270 40.6	21.3	275 03.0	40.1	Sirius	259 08.3	S 16 39.6
15	225 14.7		75 14.5	.. 03.2	23 44.8	.. 47.5	285 43.1	.. 21.4	290 05.5	.. 40.1	Spica	159 12.8	S 10 57.5
16	240 17.2		90 14.0	02.2	38 45.7	48.1	300 45.6	21.4	305 08.0	40.1	Suhail	223 21.6	S 43 16.4
17	255 19.7		105 13.5	01.3	53 46.6	48.7	315 48.1	21.4	320 10.5	40.1			
18	270 22.1		120 13.0	N13 00.3	68 47.5	S 8 49.4	330 50.6	S21 21.4	335 13.0	S21 40.1	Vega	81 05.4	N 38 45.2
19	285 24.6		135 12.5	12 59.4	83 48.4	50.0	345 53.0	21.4	350 15.5	40.1	Zuben'ubi	137 49.0	S 15 52.8
20	300 27.0		150 12.0	58.4	98 49.3	50.7	0 55.5	21.4	5 17.9	40.1			
21	315 29.5		165 11.5	.. 57.5	113 50.2	.. 51.3	15 58.0	.. 21.4	20 20.4	.. 40.1			
22	330 32.0		180 11.1	56.5	128 51.1	51.9	31 00.5	21.4	35 22.9	40.1	Venus	211 55.2	Mer. Pass. h m 9 58
23	345 34.4		195 10.6	55.6	143 52.0	52.6	46 02.9	21.4	50 25.4	40.1	Mars	159 30.7	13 27
											Jupiter	60 27.5	20 00
											Saturn	64 49.6	19 43
Mer. Pass.	^h ^m 0 05.4		^v -0.5	^d 0.9	^v 0.9	^d 0.6	^v 2.5	^d 0.0	^v 2.5	^d 0.0			

G.M.T.	SUN		MOON				Lat.	Twilight		Sun-rise	Moonrise			
	G.H.A.	Dec.	G.H.A.	φ	Dec.	d'		Naut.	Civil		19	20	21	22
d h	o	'	o	'	'	"	o	h m	h m	h m	h m	h m	h m	h m
19	181	30.0	N 1 39.8	76 27.7	6.4	S 19 14.4	0.6	02 43	04 19	05 28	18 17	18 19	18 55	18 42
00	196	30.2	38.8	90 53.1	6.3	19 13.8	0.7	03 06	04 29	05 31	18 17	18 25	18 26	18 26
01	211	30.4	37.9	105 18.4	6.3	19 13.1	0.8	03 24	04 36	05 33	17 27	17 52	18 05	18 13
02	226	30.6	36.9	119 43.7	6.2	19 12.3	0.9	03 38	04 43	05 35	16 55	17 28	17 48	18 02
03	241	30.9	35.9	134 08.9	6.3	19 11.4	1.1	03 49	04 48	05 36	16 32	17 09	17 34	17 53
04	256	31.1	35.0	148 34.2	6.1	19 10.3	1.2	03 58	04 53	05 38	16 13	16 53	17 23	17 45
05	271	31.3	N 1 34.0	162 59.3	6.2	S 19 09.1	1.3	04 06	04 57	05 39	15 58	16 40	17 13	17 38
06	286	31.5	33.0	177 24.5	6.1	19 07.8	1.5	04 13	05 00	05 40	15 45	16 29	17 04	17 32
07	301	31.8	32.1	191 49.6	6.1	19 06.3	1.5	04 19	05 03	05 41	15 33	16 19	16 56	17 27
08	316	32.0	31.1	206 14.7	6.1	19 04.8	1.7	04 24	05 06	05 41	15 23	16 10	16 49	17 22
09	331	32.2	30.1	220 39.8	6.0	19 03.1	1.9	04 28	05 08	05 42	15 14	16 02	16 43	17 18
10	346	32.4	29.1	235 04.8	6.0	19 01.2	1.9	04 32	05 10	05 43	15 06	15 55	16 37	17 14
11	1 32.6	N 1 28.2	249 29.8	263 54.8	6.0	S 18 59.3	2.1	04 40	05 15	05 44	14 50	15 40	16 25	17 05
12	16 32.9	27.2	263 54.8	278 19.8	5.9	18 57.2	2.2	04 46	05 18	05 45	14 36	15 28	16 15	16 58
13	31 33.1	26.2	278 19.8	292 44.7	5.9	18 55.0	2.4	04 51	05 21	05 46	14 24	15 17	16 06	16 52
14	46 33.3	25.3	292 44.7	307 09.6	5.9	18 52.6	2.4	05 01	05 26	05 48	14 14	15 08	15 59	16 47
15	61 33.5	24.3	307 09.6	321 34.5	5.9	18 50.2	2.6	05 05	05 28	05 49	13 56	14 52	15 46	16 37
16	76 33.8	23.3	321 34.5	335 59.4	5.9	18 47.6	2.8	05 06	05 30	05 50	13 41	14 38	15 34	16 29
17	91 34.0	N 1 22.4	335 59.4	350 24.3	5.8	S 18 44.8	3.0	05 06	05 30	05 51	13 26	14 25	15 23	16 21
18	106 34.2	21.4	350 24.3	4 49.1	5.8	18 42.0	3.0	05 04	05 30	05 52	13 11	14 11	15 12	16 13
19	121 34.4	20.4	4 49.1	19 13.9	5.8	18 39.0	3.1	05 04	05 30	05 52	12 56	13 57	15 01	16 05
20	136 34.6	19.4	19 13.9	33 38.7	5.8	18 35.9	3.3	05 01	05 29	05 52	12 38	13 41	14 47	15 55
21	151 34.9	18.5	33 38.7	48 03.5	5.8	18 32.6	3.3	04 58	05 28	05 53	12 28	13 32	14 40	15 49
22	166 35.1	17.5	48 03.5	62 28.3	5.8	18 29.3	3.5	04 55	05 26	05 53	12 16	13 21	14 31	15 43
23	181 35.3	N 1 16.5	62 28.3	76 58.1	5.7	S 18 25.8	3.7	04 50	05 24	05 54	12 03	13 09	14 20	15 36
20	196 35.5	15.6	76 58.1	91 17.8	5.8	18 22.1	3.7	04 44	05 22	05 54	11 46	12 53	14 08	15 27
00	211 35.8	14.6	91 17.8	105 42.6	5.7	18 18.4	3.9	04 41	05 21	05 54	11 38	12 46	14 02	15 23
01	226 36.0	13.6	105 42.6	120 07.3	5.8	18 14.5	4.0	04 38	05 19	05 54	11 29	12 38	13 56	15 18
02	241 36.2	12.6	120 07.3	134 32.1	5.7	18 10.5	4.1	04 34	05 18	05 55	11 19	12 29	13 48	15 13
03	256 36.4	11.7	134 32.1	148 56.8	5.7	18 06.4	4.3	04 29	05 16	05 55	11 07	12 19	13 40	15 08
04	271 36.6	N 1 10.7	148 56.8	163 21.5	5.7	S 18 02.1	4.4	04 24	05 14	05 55	10 54	12 07	13 31	15 01
05	286 36.9	09.7	163 21.5	177 46.2	5.7	17 57.7	4.5	Lat.	Sun-set	Twilight	Moonset			
06	301 37.1	08.8	177 46.2	192 10.9	5.7	17 53.2	4.6			Civil	19	20	21	22
07	316 37.3	07.8	192 10.9	206 35.6	5.7	17 48.6	4.8	o	h m	h m	h m	h m	h m	h m
08	331 37.5	06.8	206 35.6	221 00.3	5.7	17 43.8	4.9	N 72	18 16	19 25	20 58	22 10	24 36	00 36
09	346 37.8	05.8	221 00.3	235 25.0	5.7	17 38.9	5.0	N 70	18 14	19 16	20 36	21 08	23 03	25 03
10	1 38.0	N 1 04.9	235 25.0	249 49.7	5.7	S 17 33.9	5.1	68	18 12	19 08	20 20	21 58	23 35	25 23
11	16 38.2	03.9	249 49.7	264 14.4	5.7	17 28.8	5.3	66	18 10	19 02	20 06	22 29	23 59	25 39
12	31 38.4	02.9	264 14.4	278 39.1	5.7	17 23.5	5.4	64	18 09	18 57	19 55	22 52	24 17	00 17
13	46 38.6	02.0	278 39.1	293 03.8	5.7	17 18.1	5.5	62	18 08	18 52	19 47	22 52	24 17	00 17
14	61 38.9	01.0	293 03.8	307 28.5	5.8	17 12.6	5.6	60	18 07	18 49	19 39	23 10	24 32	00 32
15	76 39.1	1 00.0	307 28.5	321 53.3	5.7	17 07.0	5.8	58	18 06	18 45	19 32	23 26	24 45	00 45
16	91 39.3	N 0 59.1	321 53.3	336 18.0	5.7	S 17 01.2	5.8	56	18 06	18 45	19 32	23 39	24 56	00 56
17	106 39.5	58.1	336 18.0	350 42.7	5.7	16 55.4	6.0	54	18 05	18 42	19 27	23 50	25 05	01 05
18	121 39.8	57.1	350 42.7	4 07.5	5.7	16 49.4	6.1	52	18 04	18 40	19 22	24 00	00 00	01 13
19	136 40.0	56.1	4 07.5	19 32.2	5.8	16 43.3	6.3	50	18 04	18 38	19 17	24 08	00 08	01 21
20	151 40.2	55.2	19 32.2	33 57.0	5.7	16 37.0	6.3	48	18 03	18 36	19 14	24 16	00 16	01 27
21	166 40.4	54.2	33 57.0	48 21.7	5.8	16 30.7	6.5	45	18 02	18 31	19 06	24 23	00 33	01 42
21	181 40.6	N 0 53.2	48 21.7	62 46.5	5.8	S 16 24.2	6.6	N 40	18 01	18 28	19 00	24 46	00 46	01 54
00	196 40.9	52.3	62 46.5	77 11.3	5.8	16 17.6	6.7	35	18 00	18 25	18 55	24 58	00 58	02 04
01	211 41.1	51.3	77 11.3	91 36.1	5.8	16 10.9	6.8	30	17 59	18 23	18 51	00 07	01 08	02 12
02	226 41.3	50.3	91 36.1	106 00.9	5.8	16 04.1	6.9	20	17 58	18 20	18 46	00 25	01 25	02 27
03	241 41.5	49.3	106 00.9	120 25.7	5.9	15 57.2	7.1	N 10	17 57	18 18	18 43	00 41	01 40	02 40
04	256 41.7	48.4	120 25.7	134 50.6	5.9	15 50.1	7.2	0	17 57	18 17	18 41	00 56	01 54	02 53
05	271 42.0	N 0 47.4	134 50.6	149 15.4	5.9	S 15 42.9	7.2	S 10	17 56	18 17	18 41	01 10	02 08	03 05
06	286 42.2	46.4	149 15.4	163 40.3	5.9	15 35.7	7.4	20	17 56	18 18	18 43	01 26	02 23	03 18
07	301 42.4	45.4	163 40.3	178 05.2	5.9	15 28.3	7.5	30	17 55	18 19	18 47	01 44	02 40	03 32
08	316 42.6	44.5	178 05.2	192 30.1	6.0	15 20.8	7.6	35	17 55	18 20	18 49	01 54	02 49	03 41
09	331 42.8	43.5	192 30.1	206 55.1	5.9	15 13.2	7.7	40	17 54	18 22	18 53	02 06	03 01	03 50
10	346 43.1	42.5	206 55.1	221 20.0	6.0	15 05.5	7.9	45	17 54	18 24	18 58	02 20	03 14	04 01
11	1 43.3	N 0 41.6	221 20.0	235 45.0	6.0	S 14 57.6	7.9	S 50	17 54	18 26	19 04	02 37	03 29	04 15
12	16 43.5	40.6	235 45.0	250 10.0	6.0	14 49.7	8.0	52	17 54	18 28	19 07	02 45	03 37	04 21
13	31 43.7	39.6	250 10.0	264 35.0	6.1	14 41.7	8.2	54	17 54	18 29	19 11	02 54	03 45	04 28
14	46 44.0	38.6	264 35.0	279 00.1	6.1	14 33.5	8.2	56	17 54	18 31	19 15	03 04	03 54	04 36
15	61 44.2	37.7	279 00.1	293 25.1	6.1	14 25.3	8.4	58	17 53	18 33	19 19	03 16	04 05	04 44
16	76 44.4	36.7	293 25.1	307 50.2	6.1	14 16.9	8.5	S 60	17 53	18 35	19 25	03 29	04 17	04 54
17	91 44.6	N 0 35.7	307 50.2	322 15.3	6.2	S 14 08.4	8.5	Day	SUN		MOON			
18	106 44.8	34.7	322 15.3	336 40.5	6.1	13 59.9	8.7		Eqn. of Time	Mer. Pass.	Mer. Upper	Pass. Lower	Age	Phase
19	121 45.1	33.8	336 40.5	351 05.6	6.2	13 51.2	8.7		00h	12h				
20	136 45.3	32.8	351 05.6	4 30.8	6.2	13 42.5	8.9		m s	m s	h m	h m	h m	d
21	151 45.5	31.8	4 30.8	19 56.0	6.3	13 33.6	9.0	19	05 59	06 10	11 54	19 40	07 11	09
22	166 45.7	30.9	19 56.0			13 24.6	9.0	20	06 21	06 31	11 53	20 39	08 09	10
23								21	06 42	06 53	11 53	21 37	09 08	11
	S.D. 16.0	d 1.0	S.D. 16.2	16.4	16.5									



	ARIES	VENUS	-3.4	MARS	+1.8	JUPITER	-2.1	SATURN	+0.6	STARS		
G.M.T.	G.H.A.	G.H.A.	Dec.	G.H.A.	Dec.	G.H.A.	Dec.	G.H.A.	Dec.	Name	S.H.A.	Dec.
22 ^d 00 ^h	0 36.9	210 10.1	N 12 54.6	158 52.9	S 8 53.2	61 05.4	S 21 21.4	65 27.9	S 21 40.1	Acamar	315 47.7	S 40 27.3
01	15 39.4	225 09.6	53.7	173 53.9	53.9	76 07.9	21.4	80 30.4	40.1	Achernar	335 55.4	S 57 25.8
02	30 41.8	240 09.1	52.7	188 54.8	54.5	91 10.4	21.4	95 32.9	40.1	Acrux	173 53.7	S 62 53.1
03	45 44.3	255 08.6	51.8	203 55.7	55.1	106 12.9	21.4	110 35.4	40.1	Adhara	255 43.4	S 28 55.0
04	60 46.8	270 08.1	50.8	218 56.6	55.8	121 15.3	21.4	125 37.9	40.1	Aldebaran	291 34.2	N 16 25.9
05	75 49.2	285 07.6	49.9	233 57.5	56.4	136 17.8	21.4	140 40.3	40.2			
06	90 51.7	300 07.2	N 12 48.9	248 58.4	S 8 57.1	151 20.3	S 21 21.4	155 42.8	S 21 40.2	Alioth	166 55.6	N 56 10.3
07	105 54.1	315 06.7	48.0	263 59.3	57.7	166 22.8	21.4	170 45.3	40.2	Alkaid	153 30.2	N 49 30.5
08	120 56.6	330 06.2	47.0	279 00.2	58.3	181 25.2	21.4	185 47.8	40.2	Al Na'ir	28 32.5	S 47 08.8
F 09	135 59.1	345 05.7	46.1	294 01.1	59.0	196 27.7	21.4	200 50.3	40.2	Alnilam	276 26.1	S 1 13.5
R 10	151 01.5	0 05.2	45.1	309 02.0	59.6	211 30.2	21.4	215 52.8	40.2	Alphard	218 34.8	S 8 29.4
I 11	166 04.0	15 04.7	44.2	324 02.9	9 00.3	226 32.7	21.4	230 55.3	40.2			
D 12	181 06.5	30 04.2	N 12 43.2	339 03.8	S 9 00.9	241 35.1	S 21 21.4	245 57.8	S 21 40.2	Alphecca	126 44.4	N 26 50.9
A 13	196 08.9	45 03.8	42.2	354 04.7	01.5	256 37.6	21.4	261 00.2	40.2	Alpheratz	358 23.7	N 28 52.8
Y 14	211 11.4	60 03.3	41.3	9 05.6	02.2	271 40.1	21.4	276 02.7	40.2	Altair	62 46.3	N 8 46.2
15	226 13.9	75 02.8	40.3	24 06.5	02.8	286 42.6	21.4	291 05.2	40.2	Ankaa	353 53.9	S 42 30.8
16	241 16.3	90 02.3	39.4	39 07.4	03.5	301 45.0	21.4	306 07.7	40.2	Antares	113 14.4	S 26 20.8
17	256 18.8	105 01.8	38.4	54 08.3	04.1	316 47.5	21.4	321 10.2	40.2			
18	271 21.3	120 01.3	N 12 37.4	69 09.2	S 9 04.7	331 50.0	S 21 21.4	336 12.7	S 21 40.2	Arcturus	146 31.7	N 19 23.2
19	286 23.7	135 00.9	36.5	84 10.1	05.4	346 52.4	21.4	351 15.2	40.2	Atria	108 51.6	S 68 57.7
20	301 26.2	150 00.4	35.5	99 11.0	06.0	1 54.9	21.4	6 17.6	40.2	Avior	234 34.3	S 59 22.9
21	316 28.6	164 59.9	34.6	114 11.9	06.7	16 57.4	21.4	21 20.1	40.2	Bellatrix	279 14.0	N 6 19.0
22	331 31.1	179 59.4	33.6	129 12.8	07.3	31 59.9	21.4	36 22.6	40.3	Betelgeuse	271 43.7	N 7 24.0
23	346 33.6	194 58.9	32.6	144 13.7	07.9	47 02.3	21.4	51 25.1	40.3			
23 ^d 00 ^h	1 36.0	209 58.5	N 12 31.7	159 14.6	S 9 08.6	62 04.8	S 21 21.4	66 27.6	S 21 40.3	Canopus	264 13.6	S 52 40.2
01	16 38.5	224 58.0	30.7	174 15.5	09.2	77 07.3	21.4	81 30.1	40.3	Capella	281 32.2	N 45 57.4
02	31 41.0	239 57.5	29.7	189 16.4	09.8	92 09.7	21.4	96 32.5	40.3	Deneb	49 57.9	N 45 08.9
03	46 43.4	254 57.0	28.8	204 17.3	10.5	107 12.2	21.4	111 35.0	40.3	Denebola	183 13.9	N 14 47.3
04	61 45.9	269 56.5	27.8	219 18.2	11.1	122 14.7	21.4	126 37.5	40.3	Diphda	349 34.8	S 18 11.7
05	76 48.4	284 56.1	26.8	234 19.1	11.8	137 17.1	21.4	141 40.0	40.3			
06	91 50.8	299 55.6	N 12 25.9	249 20.0	S 9 12.4	152 19.6	S 21 21.4	156 42.5	S 21 40.3	Dubhe	194 40.3	N 61 57.5
07	106 53.3	314 55.1	24.9	264 20.9	13.0	167 22.1	21.4	171 45.0	40.3	Elnath	279 02.1	N 28 34.5
08	121 55.7	329 54.6	23.9	279 21.8	13.7	182 24.5	21.4	186 47.4	40.3	Eltanin	91 04.4	N 51 30.0
09	136 58.2	344 54.1	23.0	294 22.7	14.3	197 27.0	21.4	201 49.9	40.3	Enif	34 25.3	N 9 42.1
10	152 00.7	359 53.7	22.0	309 23.6	14.9	212 29.5	21.4	216 52.4	40.3	Fomalhaut	16 06.8	S 29 49.5
11	167 03.1	14 53.2	21.0	324 24.5	15.6	227 31.9	21.4	231 54.9	40.3			
12	182 05.6	29 52.7	N 12 20.0	339 25.4	S 9 16.2	242 34.4	S 21 21.4	246 57.4	S 21 40.3	Gacrux	172 45.1	S 56 53.8
13	197 08.1	44 52.2	19.1	354 26.3	16.9	257 36.9	21.4	261 59.9	40.3	Gienah	176 32.9	S 17 19.6
14	212 10.5	59 51.8	18.1	9 27.2	17.5	272 39.3	21.4	277 02.3	40.3	Hadar	149 44.0	S 60 11.3
15	227 13.0	74 51.3	17.1	24 28.1	18.1	287 41.8	21.4	292 04.8	40.3	Hamal	328 44.7	N 23 16.9
16	242 15.5	89 50.8	16.2	39 29.0	18.8	302 44.3	21.4	307 07.3	40.4	Kaus Aust.	84 35.7	S 34 24.2
17	257 17.9	104 50.3	15.2	54 29.9	19.4	317 46.7	21.4	322 09.8	40.4			
18	272 20.4	119 49.8	N 12 14.2	69 30.8	S 9 20.0	332 49.2	S 21 21.4	337 12.3	S 21 40.4	Kochab	137 19.2	N 74 19.1
19	287 22.9	134 49.4	13.2	84 31.7	20.7	347 51.7	21.4	352 14.8	40.4	Markab	14 17.0	N 15 00.0
20	302 25.3	149 48.9	12.3	99 32.6	21.3	2 54.1	21.4	7 17.2	40.4	Menkar	314 55.8	N 3 56.4
21	317 27.8	164 48.4	11.3	114 33.5	22.0	17 56.6	21.4	22 19.7	40.4	Menkent	148 54.1	S 36 10.8
22	332 30.2	179 47.9	10.3	129 34.4	22.6	32 59.0	21.4	37 22.2	40.4	Miaplacidus	221 48.6	S 69 33.3
23	347 32.7	194 47.5	09.3	144 35.3	23.2	48 01.5	21.4	52 24.7	40.4			
24 ^d 00 ^h	2 35.2	209 47.0	N 12 08.3	159 36.2	S 9 23.9	63 04.0	S 21 21.4	67 27.2	S 21 40.4	Mirfak	309 36.1	N 49 43.4
01	17 37.6	224 46.5	07.4	174 37.1	24.5	78 06.4	21.4	82 29.6	40.4	Nunki	76 46.7	S 26 20.7
02	32 40.1	239 46.0	06.4	189 38.0	25.1	93 08.9	21.4	97 32.1	40.4	Peacock	54 20.5	S 56 51.7
03	47 42.6	254 45.6	05.4	204 38.9	25.8	108 11.3	21.4	112 34.6	40.4	Pollux	244 15.7	N 28 07.1
04	62 45.0	269 45.1	04.4	219 39.8	26.4	123 13.8	21.4	127 37.1	40.4	Procyon	245 40.8	N 5 19.5
05	77 47.5	284 44.6	03.4	234 40.7	27.0	138 16.3	21.4	142 39.6	40.4			
06	92 50.0	299 44.2	N 12 02.5	249 41.6	S 9 27.7	153 18.7	S 21 21.4	157 42.0	S 21 40.4	Rasalhague	96 42.8	N 12 35.5
07	107 52.4	314 43.7	01.5	264 42.5	28.3	168 21.2	21.4	172 44.5	40.4	Regulus	208 25.4	N 12 09.4
08	122 54.9	329 43.2	12 00.5	279 43.4	28.9	183 23.6	21.4	187 47.0	40.4	Rigel	281 49.6	S 8 14.6
09	137 57.3	344 42.7	11 59.5	294 44.3	29.6	198 26.1	21.4	202 49.5	40.4	Rigel Kent.	140 45.7	S 60 40.6
10	152 59.8	359 42.3	58.5	309 45.2	30.2	213 28.6	21.4	217 52.0	40.5	Sabik	102 57.5	S 15 40.6
11	168 02.3	14 41.8	57.5	324 46.1	30.9	228 31.0	21.4	232 54.4	40.5			
12	183 04.7	29 41.3	N 11 56.5	339 47.0	S 9 31.5	243 33.5	S 21 21.4	247 56.9	S 21 40.5	Schedar	350 24.6	N 56 19.6
13	198 07.2	44 40.8	55.6	354 47.9	32.1	258 35.9	21.4	262 59.4	40.5	Shaula	97 15.1	S 37 04.6
14	213 09.7	59 40.4	54.6	9 48.8	32.8	273 38.4	21.4	278 01.9	40.5	Sirius	259 08.3	S 16 39.6
15	228 12.1	74 39.9	53.6	24 49.7	33.4	288 40.8	21.4	293 04.3	40.5	Spica	159 12.8	S 10 57.5
16	243 14.6	89 39.4	52.6	39 50.6	34.0	303 43.3	21.4	308 06.8	40.5	Suhail	223 21.5	S 43 16.4
17	258 17.1	104 39.0	51.6	54 51.4	34.7	318 45.7	21.4	323 09.3	40.5			
18	273 19.5	119 38.5	N 11 50.6	69 52.3	S 9 35.3	333 48.2	S 21 21.4	338 11.8	S 21 40.5	Vega	81 05.4	N 38 45.2
19	288 22.0	134 38.0	49.6	84 53.2	35.9	348 50.7	21.4	353 14.2	40.5	Zuben'ubi	137 49.0	S 15 52.8
20	303 24.5	149 37.6	48.6	99 54.1	36.6	3 53.1	21.4	8 16.7	40.5			
21	318 26.9	164 37.1	47.6	114 55.0	37.2	18 55.6	21.4	23 19.2	40.5			
22	333 29.4	179 36.6	46.6	129 55.9	37.8	33 58.0	21.4	38 21.7	40.5			
23	348 31.8	194 36.1	45.6	144 56.8	38.5	49 00.5	21.4	53 24.2	40.5			
Mer. Pass. 23 49.7	v -0.5 d 1.0			v 0.9 d 0.6			v 2.5 d					

G.M.T.		SUN		MOON				Lat.	Twilight		Sun-rise	Moonrise								
		G.H.A.	Dec.	G.H.A.	<i>v</i>	Dec.	<i>d</i>		H.P.	Naut.		Civil	22	23	24	25				
d	h	<i>m</i>	<i>s</i>	<i>m</i>	<i>s</i>	<i>m</i>	<i>s</i>	<i>m</i>	<i>m</i>	<i>m</i>	<i>m</i>	<i>m</i>	<i>m</i>	<i>m</i>	<i>m</i>					
22 F R I D A Y	00	181	45.9	N 0	29.9	34	21.3	6.3	S 13	15.6	9.1	60.8	N 72	03 03	04 33	05 42	18 42	18 32	18 24	18 16
	01	196	46.2		28.9	48	46.6	6.2	13	06.5	9.3	60.8	N 70	03 22	04 41	05 43	18 26	18 24	18 23	18 21
	02	211	46.4		27.9	63	11.8	6.4	12	57.2	9.3	60.8	68	03 37	04 48	05 44	18 13	18 18	18 21	18 25
	03	226	46.6		27.0	77	37.2	6.3	12	47.9	9.4	60.8	66	03 49	04 53	05 44	18 02	18 12	18 21	18 29
	04	241	46.8		26.0	92	02.5	6.4	12	38.5	9.5	60.8	64	03 59	04 57	05 45	17 53	18 07	18 20	18 32
	05	256	47.0		25.0	106	27.9	6.4	12	29.0	9.6	60.8	62	04 07	05 01	05 45	17 45	18 03	18 19	18 34
	06	271	47.3	N 0	24.0	120	53.3	6.5	S 12	19.4	9.7	60.8	60	04 14	05 04	05 46	17 38	18 00	18 19	18 37
	07	286	47.5		23.1	135	18.8	6.5	12	09.7	9.8	60.8	N 58	04 20	05 07	05 46	17 32	17 56	18 18	18 39
	08	301	47.7		22.1	149	44.3	6.5	11	59.9	9.9	60.9	56	04 25	05 09	05 46	17 27	17 54	18 18	18 41
	09	316	47.9		21.1	164	09.8	6.5	11	50.0	9.9	60.9	54	04 30	05 12	05 47	17 22	17 51	18 17	18 43
	10	331	48.1		20.2	178	35.3	6.6	11	40.1	10.0	60.9	52	04 33	05 13	05 47	17 18	17 49	18 17	18 44
	11	346	48.4		19.2	193	00.9	6.6	11	30.1	10.1	60.9	50	04 37	05 15	05 47	17 14	17 46	18 16	18 46
	12	1	48.6	N 0	18.2	207	26.5	6.6	S 11	20.0	10.2	60.9	45	04 44	05 18	05 48	17 05	17 42	18 16	18 49
	13	16	48.8		17.2	221	52.1	6.7	11	09.8	10.3	60.9	N 40	04 49	05 21	05 48	16 58	17 38	18 15	18 51
	14	31	49.0		16.3	236	17.8	6.7	10	59.5	10.3	60.9	35	04 54	05 23	05 48	16 52	17 34	18 14	18 54
	15	46	49.2		15.3	250	43.5	6.7	10	49.2	10.4	60.9	30	04 57	05 25	05 49	16 47	17 31	18 14	18 56
	16	61	49.5		14.3	265	09.2	6.7	10	38.8	10.5	60.9	20	05 01	05 27	05 49	16 37	17 26	18 13	18 59
	17	76	49.7		13.3	279	34.9	6.8	10	28.3	10.6	60.9	N 10	05 04	05 28	05 49	16 29	17 21	18 13	19 03
	18	91	49.9	N 0	12.4	294	00.7	6.9	S 10	17.7	10.6	60.9	0	05 05	05 29	05 49	16 21	17 17	18 12	19 06
	19	106	50.1		11.4	308	26.6	6.8	10	07.1	10.7	60.9	S 10	05 04	05 28	05 49	16 13	17 13	18 11	19 09
	20	121	50.3		10.4	322	52.4	6.9	9	56.4	10.8	60.9	20	05 01	05 27	05 49	16 05	17 08	18 11	19 12
	21	136	50.6		09.5	337	18.3	7.0	9	45.6	10.8	60.9	30	04 57	05 25	05 49	15 55	17 03	18 10	19 16
	22	151	50.8		08.5	351	44.3	6.9	9	34.8	10.9	60.9	35	04 54	05 23	05 48	15 49	17 00	18 09	19 18
23	166	51.0		07.5	6	10.2	7.0	9	23.9	11.0	60.9	40	04 50	05 21	05 48	15 43	16 56	18 09	19 20	
												45	04 44	05 19	05 48	15 36	16 52	18 08	19 23	
23 S A T U R D A Y	00	181	51.2	N 0	06.5	20	36.2	7.0	S 9	12.9	11.0	60.9	S 50	04 37	05 15	05 47	15 27	16 48	18 08	19 27
	01	196	51.4		05.6	35	02.2	7.1	9	01.9	11.1	61.0	52	04 34	05 13	05 47	15 23	16 45	18 08	19 28
	02	211	51.7		04.6	49	28.3	7.1	8	50.8	11.2	61.0	54	04 30	05 12	05 47	15 18	16 43	18 07	19 30
	03	226	51.9		03.6	63	54.4	7.1	8	39.6	11.2	61.0	56	04 25	05 10	05 47	15 13	16 40	18 07	19 32
	04	241	52.1		02.6	78	20.5	7.2	8	28.4	11.3	61.0	58	04 20	05 07	05 46	15 08	16 37	18 07	19 34
	05	256	52.3		01.7	92	46.7	7.2	8	17.1	11.3	61.0	S 60	04 14	05 04	05 46	15 01	16 34	18 06	19 37
	06	271	52.5	N 0	00.7	107	12.9	7.2	S 8	05.8	11.4	61.0	Lat.		Sun-set		Twilight		Moonset	
	07	286	52.8	S 0	00.3	121	39.1	7.3	7	54.4	11.4	61.0	Civil	Naut.	22	23	24	25		
	08	301	53.0		01.3	136	05.4	7.3	7	43.0	11.5	60.9	h m	h m	h m	h m	h m	h m	h m	h m
	09	316	53.2		02.2	150	31.7	7.3	7	31.5	11.5	60.9	N 72	18 01	19 09	20 38	00 36	02 49	04 56	06 58
	10	331	53.4		03.2	164	58.0	7.4	7	20.0	11.6	60.9	N 70	18 00	19 01	20 19	01 03	03 03	05 01	06 56
	11	346	53.6		04.2	179	24.4	7.4	7	08.4	11.6	60.9	68	17 59	18 55	20 04	01 23	03 15	05 05	06 54
	12	1	53.9	S 0	05.1	193	50.8	7.4	S 6	56.8	11.7	60.9	66	17 59	18 50	19 53	01 39	03 24	05 09	06 53
	13	16	54.1		06.1	208	17.2	7.5	6	45.1	11.7	60.9	64	17 58	18 46	19 43	01 52	03 32	05 12	06 51
	14	31	54.3		07.1	222	43.7	7.5	6	33.4	11.7	60.9	62	17 58	18 42	19 36	02 03	03 39	05 15	06 50
	15	46	54.5		08.1	237	10.2	7.5	6	21.7	11.8	60.9	60	17 58	18 39	19 29	02 12	03 44	05 17	06 49
	16	61	54.7		09.0	251	36.7	7.6	6	09.9	11.8	60.9	N 58	17 57	18 37	19 23	02 20	03 49	05 19	06 48
	17	76	55.0		10.0	266	03.3	7.6	5	58.1	11.9	60.9	56	17 57	18 34	19 18	02 28	03 54	05 21	06 47
	18	91	55.2	S 0	11.0	280	29.9	7.6	S 5	46.2	11.9	60.9	54	17 57	18 32	19 14	02 34	03 58	05 23	06 47
	19	106	55.4		12.0	294	56.5	7.7	5	34.3	11.9	60.9	52	17 57	18 30	19 10	02 40	04 02	05 24	06 46
	20	121	55.6		12.9	309	23.2	7.7	5	22.4	12.0	60.9	50	17 57	18 29	19 07	02 45	04 05	05 25	06 45
	21	136	55.8		13.9	323	49.9	7.7	5	10.4	12.0	60.9	45	17 57	18 29	19 07	02 45	04 05	05 25	06 45
	22	151	56.1		14.9	338	16.6	7.8	4	58.4	12.0	60.9	40	17 57	18 25	19 00	02 56	04 12	05 28	06 44
23	166	56.3		15.9	352	43.4	7.8	4	46.4	12.1	60.9	N 40	17 56	18 23	18 55	03 05	04 18	05 31	06 43	
24 S U N D A Y	00	181	56.5	S 0	16.8	7	10.2	7.8	S 4	34.3	12.0	60.9	35	17 56	18 21	18 51	03 13	04 23	05 33	06 42
	01	196	56.7		17.8	21	37.0	7.9	4	22.3	12.1	60.8	30	17 56	18 20	18 47	03 19	04 27	05 35	06 41
	02	211	56.9		18.8	36	03.9	7.9	4	10.2	12.2	60.8	20	17 56	18 18	18 43	03 31	04 35	05 38	06 40
	03	226	57.1		19.8	50	30.8	7.9	3	58.0	12.1	60.8	N 10	17 56	18 17	18 41	03 41	04 42	05 41	06 39
	04	241	57.4		20.7	64	57.7	7.9	3	45.9	12.2	60.8	0	17 56	18 16	18 40	03 51	04 48	05 43	06 38
	05	256	57.6		21.7	79	24.6	8.0	3	33.7	12.1	60.8	S 10	17 56	18 17	18 41	04 00	04 54	05 46	06 36
	06	271	57.8	S 0	22.7	93	51.6	8.0	S 3	21.6	12.2	60.8	20	17 56	18 18	18 44	04 10	05 00	05 48	06 35
	07	286	58.0		23.6	108	18.6	8.1	3	09.4	12.3	60.8	30	17 57	18 21	18 48	04 22	05 08	05 51	06 33
	08	301	58.2		24.6	122	45.7	8.0	2	57.1	12.2	60.8	35	17 57	18 22	18 52	04 28	05 12	05 53	06 33
	09	316	58.5		25.6	137	12.7	8.1	2	44.9	12.2	60.7	40	17 57	18 24	18 56	04 35	05 16	05 55	06 32
	10	331	58.7		26.6	151	39.8	8.2	2	32.7	12.3	60.7	45	17 58	18 27	19 02	04 44	05 22	05 57	06 30
	11	346	58.9		27.5	166	07.0	8.1	2	20.4	12.2	60.7	S 50	17 58	18 31	19 09	04 54	05 28	06 00	06 29
	12	1	59.1	S 0	28.5	180	34.1	8.2	S 2	08.2	12.3	60.7	52							

		ARIES		VENUS -3-4		MARS +1-8		JUPITER -2-1		SATURN +0-6		STARS				
G.M.T.		G.H.A.	G.H.A.	Dec.	G.H.A.	Dec.	G.H.A.	Dec.	G.H.A.	Dec.	G.H.A.	Dec.	Name	S.H.A.	Dec.	
MONDAY	d 2500 ^h	3 34.3	209 35.7	N11 44.7	159 57.7	S 9 39.1	64 02.9	S21 21.4	68 26.6	S21 40.5			Acamar	315 47.7	S 40 27.3	
	01	18 36.8	224 35.2	43.7	174 58.6	39.7	79 05.4	21.4	83 29.1	40.5			Achernar	335 55.4	S 57 25.8	
	02	33 39.2	239 34.7	42.7	189 59.5	40.4	94 07.8	21.4	98 31.6	40.5			Acrux	173 53.7	S 62 53.1	
	03	48 41.7	254 34.3	.. 41.7	205 00.4	.. 41.0	109 10.3	.. 21.4	113 34.1	.. 40.5			Adhara	255 43.4	S 28 55.0	
	04	63 44.2	269 33.8	40.7	220 01.3	41.6	124 12.7	21.4	128 36.5	40.5			Aldebaran	291 34.2	N 16 25.9	
	05	78 46.6	284 33.3	39.7	235 02.2	42.3	139 15.2	21.4	143 39.0	40.5						
	06	93 49.1	299 32.9	N11 38.7	250 03.1	S 9 42.9	154 17.6	S21 21.4	158 41.5	S21 40.5			Alioth	166 55.6	N 56 10.2	
	07	108 51.6	314 32.4	37.7	265 03.9	43.6	169 20.1	21.4	173 44.0	40.5			Alkaid	153 30.2	N 49 30.5	
	08	123 54.0	329 31.9	36.7	280 04.8	44.2	184 22.5	21.4	188 46.4	40.5			Al Na'ir	28 32.5	S 47 08.9	
	09	138 56.5	344 31.5	.. 35.7	295 05.7	.. 44.8	199 25.0	.. 21.4	203 48.9	.. 40.6			Alnilam	276 26.1	S 1 13.5	
	10	153 58.9	359 31.0	34.7	310 06.6	45.5	214 27.4	21.4	218 51.4	40.6			Alphard	218 34.8	S 8 29.4	
	11	169 01.4	14 30.5	33.7	325 07.5	46.1	229 29.9	21.3	233 53.9	40.6						
	12	184 03.9	29 30.1	N11 32.7	340 08.4	S 9 46.7	244 32.3	S21 21.3	248 56.3	S21 40.6			Alphecca	126 44.4	N 26 50.9	
	13	199 06.3	44 29.6	31.7	355 09.3	47.4	259 34.8	21.3	263 58.8	40.6			Alpheratz	358 23.7	N 28 52.8	
	14	214 08.8	59 29.2	30.7	10 10.2	48.0	274 37.2	21.3	279 01.3	40.6			Altair	62 46.3	N 8 46.2	
	15	229 11.3	74 28.7	.. 29.7	25 11.1	.. 48.6	289 39.7	.. 21.3	294 03.7	.. 40.6			Ankaa	353 53.9	S 42 30.8	
	16	244 13.7	89 28.2	28.7	40 12.0	49.3	304 42.1	21.3	309 06.2	40.6			Antares	113 14.5	S 26 20.8	
	17	259 16.2	104 27.8	27.7	55 12.8	49.9	319 44.6	21.3	324 08.7	40.6						
	18	274 18.7	119 27.3	N11 26.7	70 13.7	S 9 50.5	334 47.0	S21 21.3	339 11.2	S21 40.6			Arcturus	146 31.7	N 19 23.2	
	19	289 21.1	134 26.8	25.7	85 14.6	51.2	349 49.5	21.3	354 13.6	40.6			Atria	108 51.6	S 68 57.7	
	20	304 23.6	149 26.4	24.7	100 15.5	51.8	4 51.9	21.3	9 16.1	40.6			Avior	234 34.3	S 59 22.9	
	21	319 26.1	164 25.9	.. 23.7	115 16.4	.. 52.4	19 54.4	.. 21.3	24 18.6	.. 40.6			Bellatrix	279 14.0	N 6 19.0	
	22	334 28.5	179 25.4	22.7	130 17.3	53.1	34 56.8	21.3	39 21.1	40.6			Betelgeuse	271 43.6	N 7 24.0	
23	349 31.0	194 25.0	21.6	145 18.2	53.7	49 59.2	21.3	54 23.5	40.6							
TUESDAY	d 2600 ^h	4 33.4	209 24.5	N11 20.6	160 19.1	S 9 54.3	65 01.7	S21 21.3	69 26.0	S21 40.6			Canopus	264 13.6	S 52 40.2	
	01	19 35.9	224 24.1	19.6	175 19.9	54.9	80 04.1	21.3	84 28.5	40.6			Capella	281 32.2	N 45 57.4	
	02	34 38.4	239 23.6	18.6	190 20.8	55.6	95 06.6	21.3	99 30.9	40.6			Deneb	49 57.9	N 45 08.9	
	03	49 40.8	254 23.1	.. 17.6	205 21.7	.. 56.2	110 09.0	.. 21.3	114 33.4	.. 40.6			Denebola	183 13.9	N 14 47.3	
	04	64 43.3	269 22.7	16.6	220 22.6	56.8	125 11.5	21.3	129 35.9	40.6			Diphda	349 34.8	S 18 11.7	
	05	79 45.8	284 22.2	15.6	235 23.5	57.5	140 13.9	21.3	144 38.4	40.6						
	06	94 48.2	299 21.8	N11 14.6	250 24.4	S 9 58.1	155 16.3	S21 21.3	159 40.8	S21 40.6			Dubhe	194 40.3	N 61 57.5	
	07	109 50.7	314 21.3	13.6	265 25.3	58.7	170 18.8	21.3	174 43.3	40.6			Elnath	279 02.0	N 28 34.5	
	08	124 53.2	329 20.8	12.6	280 26.2	9 59.4	185 21.2	21.3	189 45.8	40.6			Eltanin	91 04.4	N 51 30.0	
	09	139 55.6	344 20.4	.. 11.5	295 27.0	10 00.0	200 23.7	.. 21.3	204 48.2	.. 40.6			Enif	34 25.3	N 9 42.1	
	10	154 58.1	359 19.9	10.5	310 27.9	00.6	215 26.1	21.3	219 50.7	40.6			Fomalhaut	16 06.8	S 29 49.5	
	11	170 00.5	14 19.5	09.5	325 28.8	01.3	230 28.5	21.2	234 53.2	40.6						
	12	185 03.0	29 19.0	N11 08.5	340 29.7	S10 01.9	245 31.0	S21 21.2	249 55.6	S21 40.6			Gacrux	172 45.1	S 56 53.8	
	13	200 05.5	44 18.5	07.5	355 30.6	02.5	260 33.4	21.2	264 58.1	40.7			Gienah	176 32.9	S 17 19.6	
	14	215 07.9	59 18.1	06.5	10 31.5	03.2	275 35.9	21.2	280 00.6	40.7			Hadar	149 44.0	S 60 11.3	
	15	230 10.4	74 17.6	.. 05.4	25 32.4	.. 03.8	290 38.3	.. 21.2	295 03.1	.. 40.7			Hamal	328 44.7	N 23 16.9	
	16	245 12.9	89 17.2	04.4	40 33.2	04.4	305 40.7	21.2	310 05.5	40.7			Kaus Aust.	84 35.7	S 34 24.2	
	17	260 15.3	104 16.7	03.4	55 34.1	05.0	320 43.2	21.2	325 08.0	40.7						
	18	275 17.8	119 16.2	N11 02.4	70 35.0	S10 05.7	335 45.6	S21 21.2	340 10.5	S21 40.7			Kochab	137 19.3	N 74 19.1	
	19	290 20.3	134 15.8	01.4	85 35.9	06.3	350 48.1	21.2	355 12.9	40.7			Markab	14 17.0	N 15 00.1	
	20	305 22.7	149 15.3	11 00.4	100 36.8	06.9	5 50.5	21.2	10 15.4	40.7			Menkar	314 55.8	N 3 56.4	
	21	320 25.2	164 14.9	10 59.3	115 37.7	.. 07.6	20 52.9	.. 21.2	25 17.9	.. 40.7			Menkent	148 54.1	S 36 10.8	
	22	335 27.7	179 14.4	58.3	130 38.5	08.2	35 55.4	21.2	40 20.3	40.7			Miaplacidus	221 48.6	S 69 33.3	
23	350 30.1	194 14.0	57.3	145 39.4	08.8	50 57.8	21.2	55 22.8	40.7							
WEDNESDAY	d 2700 ^h	5 32.6	209 13.5	N10 56.3	160 40.3	S10 09.5	66 00.2	S21 21.2	70 25.3	S21 40.7			Mirfak	309 36.1	N 49 43.4	
	01	20 35.0	224 13.0	55.2	175 41.2	10.1	81 02.7	21.2	85 27.7	40.7			Nunki	76 46.8	S 26 20.7	
	02	35 37.5	239 12.6	54.2	190 42.1	10.7	96 05.1	21.2	100 30.2	40.7			Peacock	54 20.6	S 56 51.7	
	03	50 40.0	254 12.1	.. 53.2	205 43.0	.. 11.3	111 07.5	.. 21.2	115 32.7	.. 40.7			Pollux	244 15.7	N 28 07.1	
	04	65 42.4	269 11.7	52.2	220 43.8	12.0	126 10.0	21.2	130 35.1	40.7			Procyon	245 40.8	N 5 19.5	
	05	80 44.9	284 11.2	51.2	235 44.7	12.6	141 12.4	21.1	145 37.6	40.7						
	06	95 47.4	299 10.8	N10 50.1	250 45.6	S10 13.2	156 14.8	S21 21.1	160 40.1	S21 40.7			Rasalhague	96 42.8	N 12 35.5	
	07	110 49.8	314 10.3	49.1	265 46.5	13.9	171 17.3	21.1	175 42.5	40.7			Regulus	208 25.4	N 12 09.4	
	08	125 52.3	329 09.9	48.1	280 47.4	14.5	186 19.7	21.1	190 45.0	40.7			Rigel	281 49.6	S 8 14.6	
	09	140 54.8	344 09.4	.. 47.1	295 48.3	.. 15.1	201 22.1	.. 21.1	205 47.5	.. 40.7			Rigel Kent.	140 45.8	S 60 40.6	
	10	155 57.2	359 09.0	46.0	310 49.1	15.7	216 24.6	21.1	220 49.9	40.7			Sabik	102 57.5	S 15 40.6	
	11	170 59.7	14 08.5	45.0	325 50.0	16.4	231 27.0	21.1	235 52.4	40.7						
	12	186 02.2	29 08.1	N10 44.0	340 50.9	S10 17.0	246 29.4	S21 21.1	250 54.9	S21 40.7			Schedar	350 24.6	N 56 19.6	
	13	201 04.6	44 07.6	42.9	355 51.8	17.6	261 31.9	21.1	265 57.3	40.7			Shaula	97 15.2	S 37 04.6	
	14	216 07.1	59 07.1	41.9	10 52.7	18.3	276 34.3	21.1	280 59.8	40.7			Sirius	259 08.3	S 16 39.6	
	15	231 09.5	74 06.7	.. 40.9	25 53.5	.. 18.9	291 36.7	.. 21.1	296 02.3	.. 40.7			Spica	159 12.8	S 10 57.5	
	16	246 12.0	89 06.2	39.8	40 54.4	19.5	306 39.2	21.1	311 04.7	40.7			Suhail	223 21.5	S 43 16.4	
	17	261 14.5	104 05.8	38.8	55 55.3	20.1	321 41.6	21.1	326 07.2	40.7						
	18	276 16.9	119 05.3	N10 37.8	70 56.2	S10 20.8	336 44.0	S21 21.1	341 09.6	S21 40.7			Vega	81 05.4	N 38 45.2	
	19	291 19.4	134 04.9	36.8	85 57.1	21.4	351 46.5	21.1	356 12.1	40.7			Zuben'ubi	137 49.1	S 15 52.8	
	20	306 21.9	149 04.4	35.7	100 57.9	22.0	6 48.9	21.1	11 14.6	40.7						
	21	321 24.3	164 04.0	.. 34.7	115 58.8	.. 22.7	21 51.3	.. 21.0	26 17.0	.. 40.7						
	22	336 26.8	179 03.5	33.7	130 59.7	23.3	36 53.7	21.0	41 19.5	40.7						
23	351 29.3	194 03.1	32.6	146 00.6	23.9	51 56.2	21.0	56 22.0	40.7							
Mer. Pass. 23 37.9		v -0.5 d 1.0			v 0.9 d 0.6			v 2.4 d 0.0			v 2.5 d 0.0			S.H.A. Mer. Pass.		

G.M.T.		SUN		MOON				Lat.	Twilight		Sun-rise	Moonrise								
		G.H.A.	Dec.	G.H.A.	φ	Dec.	d		H.P.	Naut.		Civil	25	26	27	28				
d	h	°	'	°	'	°	'	°	'	h	m	h	m	h	m	h	m			
MONDAY	25 00	182	01.7	S	0 40.2	354	02.1	8.5	N	0 19.0	12.3	60.5	N 72	03 20	04 47	05 55	18 16	18 07	17 57	17 44
	01	197	01.9		41.2	8	29.6	8.6		0 31.3	12.2	60.4	N 70	03 37	04 54	05 55	18 21	18 19	18 18	18 18
	02	212	02.1		42.1	22	57.2	8.5		0 43.5	12.2	60.4	68	03 50	04 59	05 54	18 25	18 29	18 35	18 43
	03	227	02.4	..	43.1	37	24.7	8.6		0 55.7	12.2	60.4	64	04 09	05 06	05 53	18 32	18 45	19 00	19 19
	04	242	02.6		44.1	51	52.3	8.6		1 07.9	12.2	60.4	62	04 16	05 09	05 53	18 34	18 51	19 09	19 32
	05	257	02.8		45.1	66	19.9	8.6		1 20.1	12.1	60.3	60	04 22	05 11	05 53	18 37	18 56	19 17	19 43
	06	272	03.0	S	0 46.0	80	47.5	8.6	N	1 32.2	12.2	60.3	N 58	04 27	05 14	05 53	18 39	19 01	19 25	19 53
	07	287	03.2		47.0	95	15.1	8.7		1 44.4	12.1	60.3	56	04 31	05 15	05 52	18 41	19 05	19 31	20 01
	08	302	03.4		48.0	109	42.8	8.7		1 56.5	12.1	60.3	54	04 35	05 17	05 52	18 43	19 09	19 37	20 09
	09	317	03.7	..	49.0	124	10.5	8.7		2 08.6	12.0	60.2	52	04 39	05 18	05 52	18 44	19 12	19 42	20 15
	10	332	03.9		49.9	138	38.2	8.7		2 20.6	12.1	60.2	50	04 42	05 20	05 52	18 46	19 15	19 47	20 22
	11	347	04.1		50.9	153	05.9	8.8		2 32.7	12.0	60.2	45	04 48	05 22	05 51	18 49	19 22	19 57	20 35
	12	2 04.3	S	0 51.9	167	33.7	8.7	N	2 44.7	12.0	60.2	N 40	04 52	05 24	05 51	18 51	19 28	20 06	20 46	
	13	17	04.5		52.9	182	01.4	8.8		2 56.7	12.0	60.1	35	04 56	05 25	05 51	18 54	19 33	20 13	20 56
	14	32	04.7		53.8	196	29.2	8.9		3 08.7	11.9	60.1	30	04 59	05 26	05 50	18 56	19 37	20 20	21 04
	15	47	05.0	..	54.8	210	57.1	8.8		3 20.6	11.9	60.1	20	05 02	05 28	05 50	18 59	19 45	20 31	21 18
	16	62	05.2		55.8	225	24.9	8.8		3 32.5	11.9	60.1	N 10	05 04	05 28	05 49	19 03	19 52	20 41	21 31
	17	77	05.4		56.8	239	52.7	8.9		3 44.4	11.8	60.0	0	05 03	05 27	05 48	19 06	19 59	20 51	21 43
	18	92	05.6	S	0 57.7	254	20.6	8.9	N	3 56.2	11.8	60.0	S 10	05 02	05 26	05 47	19 09	20 05	21 00	21 55
	19	107	05.8		58.7	268	48.5	8.9		4 08.0	11.8	60.0	20	04 59	05 24	05 46	19 12	20 12	21 11	22 08
	20	122	06.0		0 59.7	283	16.4	8.9		4 19.8	11.7	59.9	30	04 53	05 21	05 45	19 16	20 20	21 23	22 23
	21	137	06.3		1 00.7	297	44.3	9.0		4 31.5	11.7	59.9	35	04 49	05 19	05 44	19 18	20 25	21 29	22 31
	22	152	06.5		01.6	312	12.3	8.9		4 43.2	11.6	59.9	40	04 44	05 16	05 43	19 20	20 30	21 37	22 41
23	167	06.7		02.6	326	40.2	9.0		4 54.8	11.6	59.9	45	04 38	05 13	05 42	19 23	20 36	21 46	22 52	
TUESDAY	26 00	182	06.9	S	1 03.6	341	08.2	9.0	N	5 06.4	11.6	59.8	S 50	04 30	05 08	05 41	19 27	20 44	21 57	23 06
	01	197	07.1		04.6	355	36.2	9.0		5 18.0	11.5	59.8	52	04 26	05 06	05 40	19 28	20 47	22 02	23 13
	02	212	07.3		05.5	10	04.2	9.0		5 29.5	11.5	59.8	54	04 22	05 04	05 39	19 30	20 51	22 08	23 20
	03	227	07.5	..	06.5	24	32.2	9.0		5 41.0	11.4	59.7	56	04 17	05 01	05 39	19 32	20 55	22 14	23 28
	04	242	07.8		07.5	39	00.2	9.1		5 52.4	11.4	59.7	58	04 11	04 58	05 38	19 34	21 00	22 21	23 37
	05	257	08.0		08.4	53	28.3	9.1		6 03.8	11.3	59.7	S 60	04 04	04 55	05 37	19 37	21 05	22 29	23 48
	06	272	08.2	S	1 09.4	67	56.4	9.1	N	6 15.1	11.3	59.6	Lat.	Sun-set	Twilight	Moonset				
	07	287	08.4		10.4	82	24.5	9.1		6 26.4	11.2	59.6			Civil	Naut.	25	26	27	28
	08	302	08.6		11.4	96	52.6	9.1		6 37.6	11.2	59.6								
	09	317	08.8	..	12.3	111	20.7	9.1		6 48.8	11.1	59.5								
	10	332	09.1		13.3	125	48.8	9.1		6 59.9	11.1	59.5								
	11	347	09.3		14.3	140	16.9	9.2		7 11.0	11.0	59.5								
	12	2 09.5	S	1 15.3	154	45.1	9.2	N	7 22.0	10.9	59.4	N 70	17 46	18 47	20 02	06 56	08 48	10 39	12 27	
	13	17	09.7		16.2	169	13.3	9.2		7 32.9	10.9	59.4	68	17 47	18 42	19 50	06 54	08 40	10 24	12 03
	14	32	09.9		17.2	183	41.5	9.1		7 43.8	10.9	59.4	66	17 47	18 38	19 40	06 53	08 33	10 11	11 45
	15	47	10.1	..	18.2	198	09.6	9.3		7 54.7	10.7	59.3	64	17 48	18 35	19 32	06 51	08 28	10 01	11 30
	16	62	10.3		19.2	212	37.9	9.2		8 05.4	10.8	59.3	62	17 48	18 32	19 25	06 50	08 23	09 53	11 17
	17	77	10.5		20.1	227	06.1	9.2		8 16.2	10.6	59.3	60	17 49	18 30	19 19	06 49	08 19	09 45	11 07
	18	92	10.8	S	1 21.1	241	34.3	9.3	N	8 26.8	10.6	59.2	N 58	17 49	18 28	19 14	06 48	08 15	09 38	10 58
	19	107	11.0		22.1	256	02.6	9.2		8 37.4	10.5	59.2	56	17 49	18 26	19 10	06 47	08 12	09 33	10 50
	20	122	11.2		23.1	270	30.8	9.3		8 47.9	10.5	59.1	54	17 49	18 25	19 06	06 47	08 09	09 28	10 42
	21	137	11.4	..	24.0	284	59.1	9.3		8 58.4	10.4	59.1	52	17 50	18 23	19 03	06 46	08 06	09 23	10 36
	22	152	11.6		25.0	299	27.4	9.3		9 08.8	10.3	59.1	50	17 50	18 22	19 00	06 45	08 03	09 19	10 30
23	167	11.8		26.0	313	55.7	9.3		9 19.1	10.3	59.0	45	17 51	18 20	18 54	06 44	07 58	09 10	10 18	
WEDNESDAY	27 00	182	12.0	S	1 27.0	328	24.0	9.3	N	9 29.4	10.2	59.0	N 40	17 51	18 18	18 49	06 43	07 54	09 02	10 08
	01	197	12.3		27.9	342	52.3	9.3		9 39.6	10.1	59.0	35	17 52	18 17	18 46	06 42	07 50	08 56	09 59
	02	212	12.5		28.9	357	20.6	9.3		9 49.7	10.1	58.9	30	17 52	18 16	18 44	06 41	07 47	08 50	09 51
	03	227	12.7	..	29.9	11	48.9	9.4		9 59.8	10.0	58.9	20	17 53	18 15	18 40	06 40	07 41	08 40	09 38
	04	242	12.9		30.8	26	17.3	9.3		10 09.8	9.9	58.9	N 10	17 54	18 15	18 39	06 39	07 36	08 32	09 27
	05	257	13.1		31.8	40	45.6	9.4		10 19.7	9.8	58.8	0	17 55	18 15	18 39	06 38	07 31	08 24	09 16
	06	272	13.3	S	1 32.8	55	14.0	9.4	N	10 29.5	9.8	58.8	S 10	17 56	18 17	18 41	06 36	07 26	08 15	09 05
	07	287	13.5		33.8	69	42.4	9.4		10 39.3	9.7	58.7	20	17 57	18 19	18 44	06 35	07 21	08 07	08 53
	08	302	13.7		34.7	84	10.8	9.3		10 49.0	9.6	58.7	30	17 58	18 22	18 50	06 33	07 15	07 57	08 40
	09	317	14.0	..	35.7	98	39.1	9.5		10 58.6	9.5	58.7	35	17 59	18 25	18 54	06 33	07 12	07 52	08 33
	10	332	14.2		36.7	113	07.6	9.4		11 08.1	9.5	58.6	40	18 00	18 27	18 59	06 32	07 08		

G.M.T.	ARIES			VENUS -3.4			MARS +1.8			JUPITER -2.1			SATURN +0.7			STARS		
	G.H.A.	G.H.A.	Dec.	G.H.A.	Dec.	G.H.A.	Dec.	G.H.A.	Dec.	G.H.A.	Dec.	G.H.A.	Dec.	Name	S.H.A.	Dec.		
28 00	6 31.7	209 02.6	N10 31.6	161 01.5	S10 24.5	66 58.6	S21 21.0	71 24.4	S21 40.7	Acamar	315 47.7	S 40 27.3						
01	21 34.2	224 02.2	30.5	176 02.3	25.2	82 01.0	21.0	86 26.9	40.7	Achernar	335 55.3	S 57 25.8						
02	36 36.7	239 01.7	29.5	191 03.2	25.8	97 03.4	21.0	101 29.4	40.8	Acrux	173 53.7	S 62 53.1						
03	51 39.1	254 01.3	.. 28.5	206 04.1	.. 26.4	112 05.9	.. 21.0	116 31.8	.. 40.8	Adhara	255 43.3	S 28 55.0						
04	66 41.6	269 00.8	27.4	221 05.0	27.1	127 08.3	21.0	131 34.3	40.8	Aldebaran	291 34.2	N 16 25.9						
05	81 44.0	284 00.4	26.4	236 05.8	27.7	142 10.7	21.0	146 36.7	40.8									
06	96 46.5	298 59.9	N10 25.4	251 06.7	S10 28.3	157 13.1	S21 21.0	161 39.2	S21 40.8	Alioth	166 55.6	N 56 10.2						
07	111 49.0	313 59.5	24.3	266 07.6	28.9	172 15.6	21.0	176 41.7	40.8	Alkaid	153 30.2	N 49 30.5						
08	126 51.4	328 59.0	23.3	281 08.5	29.6	187 18.0	21.0	191 44.1	40.8	Al Na'ir	28 32.5	S 47 08.9						
09	141 53.9	343 58.6	.. 22.2	296 09.4	.. 30.2	202 20.4	.. 21.0	206 46.6	.. 40.8	Alnilam	276 26.0	S 1 13.5						
10	156 56.4	358 58.1	21.2	311 10.2	30.8	217 22.8	20.9	221 49.0	40.8	Alphard	218 34.8	S 8 29.4						
11	171 58.8	13 57.7	20.2	326 11.1	31.4	232 25.3	20.9	236 51.5	40.8									
12	187 01.3	28 57.2	N10 19.1	341 12.0	S10 32.1	247 27.7	S21 20.9	251 54.0	S21 40.8	Alphecca	126 44.4	N 26 50.9						
13	202 03.8	43 56.8	18.1	356 12.9	32.7	262 30.1	20.9	266 56.4	40.8	Alpheratz	358 23.7	N 28 52.8						
14	217 06.2	58 56.4	17.0	11 13.7	33.3	277 32.5	20.9	281 58.9	40.8	Altair	62 46.3	N 8 46.2						
15	232 08.7	73 55.9	.. 16.0	26 14.6	.. 34.0	292 35.0	.. 20.9	297 01.3	.. 40.8	Ankaa	353 53.9	S 42 30.8						
16	247 11.1	88 55.5	15.0	41 15.5	34.6	307 37.4	20.9	312 03.8	40.8	Antares	113 14.5	S 26 20.8						
17	262 13.6	103 55.0	13.9	56 16.4	35.2	322 39.8	20.9	327 06.3	40.8									
18	277 16.1	118 54.6	N10 12.9	71 17.2	S10 35.8	337 42.2	S21 20.9	342 08.7	S21 40.8	Arcturus	146 31.7	N 19 23.2						
19	292 18.5	133 54.1	11.8	86 18.1	36.5	352 44.6	20.9	357 11.2	40.8	Atria	108 51.7	S 68 57.7						
20	307 21.0	148 53.7	10.8	101 19.0	37.1	7 47.1	20.9	12 13.6	40.8	Avior	234 34.3	S 59 22.9						
21	322 23.5	163 53.2	.. 09.7	116 19.9	.. 37.7	22 49.5	.. 20.9	27 16.1	.. 40.8	Bellatrix	279 13.9	N 6 19.0						
22	337 25.9	178 52.8	08.7	131 20.7	38.3	37 51.9	20.8	42 18.6	40.8	Betelgeuse	271 43.6	N 7 24.1						
23	352 28.4	193 52.3	07.6	146 21.6	39.0	52 54.3	20.8	57 21.0	40.8									
29 00	7 30.9	208 51.9	N10 06.6	161 22.5	S10 39.6	67 56.7	S21 20.8	72 23.5	S21 40.8	Canopus	264 13.5	S 52 40.2						
01	22 33.3	223 51.4	05.5	176 23.4	40.2	82 59.2	20.8	87 25.9	40.8	Capella	281 32.2	N 45 57.4						
02	37 35.8	238 51.0	04.5	191 24.2	40.8	98 01.6	20.8	102 28.4	40.8	Deneb	49 57.9	N 45 08.9						
03	52 38.3	253 50.6	.. 03.4	206 25.1	.. 41.5	113 04.0	.. 20.8	117 30.9	.. 40.8	Denebola	183 13.9	N 14 47.3						
04	67 40.7	268 50.1	02.4	221 26.0	42.1	128 06.4	20.8	132 33.3	40.8	Diphda	349 34.8	S 18 11.7						
05	82 43.2	283 49.7	01.3	236 26.8	42.7	143 08.8	20.8	147 35.8	40.8									
06	97 45.6	298 49.2	N10 00.3	251 27.7	S10 43.3	158 11.2	S21 20.8	162 38.2	S21 40.8	Dubhe	194 40.3	N 61 57.5						
07	112 48.1	313 48.8	9 59.2	266 28.6	44.0	173 13.7	20.8	177 40.7	40.8	Elnath	279 02.0	N 28 34.5						
08	127 50.6	328 48.3	58.2	281 29.5	44.6	188 16.1	20.8	192 43.1	40.8	Eltanin	91 04.4	N 51 30.0						
09	142 53.0	343 47.9	.. 57.1	296 30.3	.. 45.2	203 18.5	.. 20.7	207 45.6	.. 40.8	Enif	34 25.3	N 9 42.1						
10	157 55.5	358 47.5	56.1	311 31.2	45.8	218 20.9	20.7	222 48.1	40.8	Fomalhaut	16 06.8	S 29 49.5						
11	172 58.0	13 47.0	55.0	326 32.1	46.5	233 23.3	20.7	237 50.5	40.8									
12	188 00.4	28 46.6	N 9 54.0	341 32.9	S10 47.1	248 25.7	S21 20.7	252 53.0	S21 40.8	Gacrux	172 45.1	S 56 53.8						
13	203 02.9	43 46.1	52.9	356 33.8	47.7	263 28.1	20.7	267 55.4	40.8	Gienah	176 32.9	S 17 19.6						
14	218 05.4	58 45.7	51.9	11 34.7	48.3	278 30.6	20.7	282 57.9	40.8	Hadar	149 44.0	S 60 11.3						
15	233 07.8	73 45.3	.. 50.8	26 35.6	.. 49.0	293 33.0	.. 20.7	298 00.3	.. 40.8	Hamal	328 44.7	N 23 16.9						
16	248 10.3	88 44.8	49.8	41 36.4	49.6	308 35.4	20.7	313 02.8	40.8	Kaus Aust.	84 35.7	S 34 24.2						
17	263 12.8	103 44.4	48.7	56 37.3	50.2	323 37.8	20.7	328 05.3	40.8									
18	278 15.2	118 43.9	N 9 47.6	71 38.2	S10 50.8	338 40.2	S21 20.7	343 07.7	S21 40.8	Kochab	137 19.3	N 74 19.1						
19	293 17.7	133 43.5	46.6	86 39.0	51.5	353 42.6	20.6	358 10.2	40.8	Markab	14 17.0	N 15 00.1						
20	308 20.1	148 43.1	45.5	101 39.9	52.1	8 45.0	20.6	13 12.6	40.8	Menkar	314 55.8	N 3 56.4						
21	323 22.6	163 42.6	.. 44.5	116 40.8	.. 52.7	23 47.4	.. 20.6	28 15.1	.. 40.8	Menkent	148 54.1	S 36 10.8						
22	338 25.1	178 42.2	43.4	131 41.7	53.3	38 49.8	20.6	43 17.5	40.8	Miaplacidus	221 48.6	S 69 33.3						
23	353 27.5	193 41.7	42.3	146 42.5	53.9	53 52.3	20.6	58 20.0	40.8									
30 00	8 30.0	208 41.3	N 9 41.3	161 43.4	S10 54.6	68 54.7	S21 20.6	73 22.4	S21 40.8	Mirfak	309 36.1	N 49 43.4						
01	23 32.5	223 40.9	40.2	176 44.3	55.2	83 57.1	20.6	88 24.9	40.8	Nunki	76 46.8	S 26 20.7						
02	38 34.9	238 40.4	39.2	191 45.1	55.8	98 59.5	20.6	103 27.3	40.8	Peacock	54 20.6	S 56 51.7						
03	53 37.4	253 40.0	.. 38.1	206 46.0	.. 56.4	114 01.9	.. 20.6	118 29.8	.. 40.8	Pollux	244 15.7	N 28 07.1						
04	68 39.9	268 39.5	37.0	221 46.9	57.1	129 04.3	20.5	133 32.3	40.8	Procyon	245 40.8	N 5 19.5						
05	83 42.3	283 39.1	36.0	236 47.7	57.7	144 06.7	20.5	148 34.7	40.8									
06	98 44.8	298 38.7	N 9 34.9	251 48.6	S10 58.3	159 09.1	S21 20.5	163 37.2	S21 40.8	Rasalhague	96 42.9	N 12 35.5						
07	113 47.2	313 38.2	33.9	266 49.5	58.9	174 11.5	20.5	178 39.6	40.8	Regulus	208 25.4	N 12 09.4						
08	128 49.7	328 37.8	32.8	281 50.3	10 59.5	189 13.9	20.5	193 42.1	40.8	Rigel	281 49.6	S 8 14.6						
09	143 52.2	343 37.4	.. 31.7	296 51.2	11 00.2	204 16.3	.. 20.5	208 44.5	.. 40.8	Rigel Kent.	140 45.8	S 60 40.6						
10	158 54.6	358 36.9	30.7	311 52.1	00.8	219 18.7	20.5	223 47.0	40.8	Sabik	102 57.6	S 15 40.6						
11	173 57.1	13 36.5	29.6	326 52.9	01.4	234 21.2	20.5	238 49.4	40.8									
12	188 59.6	28 36.0	N 9 28.5	341 53.8	S11 02.0	249 23.6	S21 20.5	253 51.9	S21 40.8	Schedar	350 24.6	N 56 19.6						
13	204 02.0	43 35.6	27.5	356 54.7	02.7	264 26.0	20.4	268 54.3	40.8	Shaula	97 15.2	S 37 04.6						
14	219 04.5	58 35.2	26.4	11 55.5	03.3	279 28.4	20.4	283 56.8	40.8	Sirius	259 08.3	S 16 39.6						
15	234 07.0	73 34.7	.. 25.3	26 56.4	.. 03.9	294 30.8	.. 20.4	298 59.2	.. 40.8	Spica	159 12.8	S 10 57.5						
16	249 09.4	88 34.3	24.3	41 57.3	04.5	309 33.2	20.4	314 01.7	40.8	Suhail	223 21.5	S 43 16.4						
17	264 11.9	103 33.9	23.2	56 58.1	05.1	324 35.6	20.4	329 04.1	40.8									
18	279 14.4	118 33.4	N 9 22.1	71 59.0	S11 05.8	339 38.0	S21 20.4	344 06.6	S21 40.8	Vega	81 05.4	N 38 45.2						
19	294 16.8	133 33.0	21.0	86 59.9	06.4	354 40.4	20.4	359 09.0	40.8	Zuben'ubi	137 49.1	S 15 52.8						
20	309 19.3	148 32.6	20.0	102 00.7	07.0	9 42.8	20.4	14 11.5	40.8									
21	324 21.7	163 32.1	.. 18.9	117 01.6	.. 07.6	24 45.2	.. 20.3	29 13.9	.. 40.8									
22	339 24.2	178 31.7	17.8	132 02.5	08.2	39 47.6	20.3	44 16.4	40.8									
23	354 26.7	193 31.2	16.8	147 03.3	08.9	54 50.0	20.3	59 18.8	40.8									
Mer. Pass. 23 26.1	v -0.4	d 1.1		v 0.9														

G.M.T.	SUN				MOON				Lat.	Twilight		Sun-rise	Moonrise				
	G.H.A.		Dec.	H.P.	G.H.A.	v	Dec.	d		Naut.	Civil		28	29	30	I	
	°	'															°
d h	°	'	°	'	°	'	°	'	°	h m	h m	h m	h m	h m	h m	h m	
28	00	182 17.1	S	1 50.3	315 46.2	9.6	N 13 13.3	8.4	58.1	N 72	03 37	05 01	06 09	17 44	17 16	□ □	
	01	197 17.3		51.3	330 14.8	9.5	13 21.7	8.2	58.1	N 70	03 51	05 06	06 06	18 18	18 22	18 34	
	02	212 17.5		52.3	344 43.3	9.6	13 29.9	8.1	58.0	68	04 02	05 09	06 05	18 43	18 58	19 24	
	03	227 17.8	..	53.2	359 11.9	9.5	13 38.0	8.1	58.0	66	04 11	05 12	06 03	19 03	19 24	19 56	
	04	242 18.0		54.2	13 40.4	9.6	13 46.1	8.0	57.9	64	04 18	05 15	06 02	19 19	19 44	20 19	
	05	257 18.2		55.2	28 09.0	9.6	13 54.1	7.8	57.9	62	04 24	05 17	06 01	19 32	20 01	20 38	
	06	272 18.4	S	1 56.2	42 37.6	9.6	N 14 01.9	7.8	57.9	60	04 29	05 18	06 00	19 43	20 14	20 53	
	07	287 18.6		57.1	57 06.2	9.6	14 09.7	7.7	57.8	N 58	04 34	05 20	05 59	19 53	20 26	21 06	
	08	302 18.8		58.1	71 34.8	9.7	14 17.4	7.6	57.8	56	04 38	05 21	05 58	20 01	20 36	21 18	
	09	317 19.0	1	59.1	86 03.5	9.6	14 25.0	7.5	57.7	54	04 41	05 22	05 58	20 09	20 45	21 27	
	10	332 19.2	2	00.0	100 32.1	9.6	14 32.5	7.5	57.7	52	04 44	05 23	05 57	20 15	20 53	21 36	
	11	347 19.4		01.0	115 00.7	9.7	14 40.0	7.3	57.7	50	04 47	05 24	05 56	20 22	21 01	21 44	
	12	2 19.6	S	2 02.0	129 29.4	9.6	N 14 47.3	7.2	57.6	45	04 52	05 26	05 55	20 35	21 16	22 01	
	13	17 19.9		03.0	143 58.0	9.7	14 54.5	7.2	57.6	N 40	04 55	05 27	05 54	20 46	21 29	22 15	
	14	32 20.1		03.9	158 26.7	9.7	15 01.7	7.1	57.5	35	04 58	05 28	05 53	20 56	21 40	22 27	
	15	47 20.3	..	04.9	172 55.4	9.7	15 08.8	6.9	57.5	30	05 00	05 28	05 52	21 04	21 49	22 37	
	16	62 20.5		05.9	187 24.1	9.7	15 15.7	6.9	57.5	20	05 03	05 28	05 50	21 18	22 06	22 55	
	17	77 20.7		06.9	201 52.8	9.7	15 22.6	6.8	57.4	N 10	05 03	05 28	05 49	21 31	22 21	23 10	
	18	92 20.9	S	2 07.8	216 21.5	9.7	N 15 29.4	6.6	57.4	0	05 02	05 26	05 47	21 43	22 34	23 25	
	19	107 21.1		08.8	230 50.2	9.7	15 36.0	6.6	57.4	S 10	05 00	05 24	05 45	21 55	22 48	23 40	
	20	122 21.3		09.8	245 18.9	9.8	15 42.6	6.5	57.3	20	04 56	05 21	05 44	22 08	23 03	23 55	
	21	137 21.5	..	10.7	259 47.7	9.7	15 49.1	6.4	57.3	30	04 49	05 17	05 41	22 23	23 20	24 13	
	22	152 21.7		11.7	274 16.4	9.8	15 55.5	6.3	57.2	35	04 45	05 15	05 40	22 31	23 29	24 23	
23	167 21.9		12.7	288 45.2	9.8	16 01.8	6.2	57.2	40	04 39	05 11	05 38	22 41	23 40	24 35		
24									45	04 32	05 07	05 36	22 52	23 54	24 49		
29	00	182 22.2	S	2 13.7	303 14.0	9.8	N 16 08.0	6.1	57.2	S 50	04 23	05 02	05 34	23 06	24 10	00 10	
	01	197 22.4		14.6	317 42.8	9.8	16 14.1	6.0	57.1	52	04 19	04 59	05 33	23 13	24 17	00 17	
	02	212 22.6		15.6	332 11.6	9.8	16 20.1	5.9	57.1	54	04 14	04 56	05 32	23 20	24 26	00 26	
	03	227 22.8	..	16.6	346 40.4	9.8	16 26.0	5.9	57.1	56	04 08	04 53	05 31	23 28	24 35	00 35	
	04	242 23.0		17.6	1 09.2	9.9	16 31.9	5.7	57.0	58	04 02	04 50	05 29	23 37	24 46	00 46	
	05	257 23.2		18.5	15 38.1	9.8	16 37.6	5.6	57.0	S 60	03 54	04 46	05 28	23 48	24 59	00 59	
	06	272 23.4	S	2 19.5	30 06.9	9.9	N 16 43.2	5.5	56.9	Lat.	Sun-set	Twilight		Moonset			
	07	287 23.6		20.5	44 35.8	9.9	16 48.7	5.4	56.9			Civil	Naut.	28	29	30	
	08	302 23.8		21.4	59 04.7	9.9	16 54.1	5.4	56.9	°	h m	h m	h m	h m	h m	h m	
	09	317 24.0	..	22.4	73 33.6	9.9	16 59.5	5.2	56.8	N 72	17 30	18 37	20 00	13 01	15 17	□ □	
	10	332 24.2		23.4	88 02.5	9.9	17 04.7	5.1	56.8	N 70	17 32	18 33	19 47	12 27	14 12	15 46	
	11	347 24.4		24.4	102 31.4	9.9	17 09.8	5.1	56.8	68	17 34	18 29	19 36	12 03	13 36	14 56	
	12	2 24.6	S	2 25.3	117 00.3	10.0	N 17 14.9	4.9	56.7	66	17 36	18 27	19 27	11 45	13 11	14 25	
	13	17 24.9		26.3	131 29.3	9.9	17 19.8	4.8	56.7	64	17 37	18 24	19 20	11 30	12 51	14 02	
	14	32 25.1		27.3	145 58.2	10.0	17 24.6	4.7	56.7	62	17 38	18 22	19 15	11 17	12 35	13 43	
	15	47 25.3	..	28.3	160 27.2	10.0	17 29.3	4.7	56.6	60	17 40	18 21	19 10	11 07	12 22	13 28	
	16	62 25.5		29.2	174 56.2	10.0	17 34.0	4.5	56.6	N 58	17 41	18 19	19 05	10 58	12 10	13 15	
	17	77 25.7		30.2	189 25.2	10.0	17 38.5	4.4	56.5	56	17 41	18 18	19 02	10 50	12 01	13 04	
	18	92 25.9	S	2 31.2	203 54.2	10.1	N 17 42.9	4.4	56.5	54	17 42	18 17	18 59	10 42	11 52	12 54	
	19	107 26.1		32.1	218 23.3	10.0	17 47.3	4.2	56.5	52	17 43	18 16	18 56	10 36	11 44	12 45	
	20	122 26.3		33.1	232 52.3	10.1	17 51.5	4.1	56.4	50	17 44	18 16	18 53	10 30	11 37	12 37	
	21	137 26.5	..	34.1	247 21.4	10.1	17 55.6	4.1	56.4	45	17 45	18 14	18 48	10 18	11 22	12 21	
	22	152 26.7		35.1	261 50.5	10.1	17 59.7	3.9	56.4	N 40	17 46	18 13	18 45	10 08	11 10	12 07	
23	167 26.9		36.0	276 19.6	10.1	18 03.6	3.8	56.3	35	17 47	18 13	18 42	09 59	10 59	11 56		
30	00	182 27.1	S	2 37.0	290 48.7	10.2	N 18 07.4	3.8	56.3	30	17 48	18 12	18 40	09 51	10 50	11 46	
	01	197 27.3		38.0	305 17.9	10.2	18 11.2	3.6	56.3	20	17 50	18 12	18 38	09 38	10 34	11 28	
	02	212 27.5		38.9	319 47.1	10.1	18 14.8	3.5	56.2	N 10	17 52	18 13	18 37	09 27	10 21	11 13	
	03	227 27.7	..	39.9	334 16.2	10.2	18 18.3	3.5	56.2	0	17 54	18 14	18 38	09 16	10 08	10 59	
	04	242 27.9		40.9	348 45.4	10.3	18 21.8	3.3	56.2	S 10	17 55	18 17	18 41	09 05	09 55	10 45	
	05	257 28.1		41.9	3 14.7	10.2	18 25.1	3.2	56.1	20	17 58	18 20	18 45	08 53	09 41	10 29	
	06	272 28.4	S	2 42.8	17 43.9	10.2	N 18 28.3	3.2	56.1	30	18 00	18 24	18 52	08 40	09 25	10 12	
	07	287 28.6		43.8	32 13.1	10.3	18 31.5	3.0	56.1	35	18 02	18 27	18 57	08 33	09 16	10 02	
	08	302 28.8		44.8	46 42.4	10.3	18 34.5	2.9	56.0	40	18 03	18 30	19 02	08 24	09 06	09 50	
	09	317 29.0	..	45.7	61 11.7	10.3	18 37.4	2.9	56.0	45	18 05	18 35	19 10	08 14	08 54	09 37	
	10	332 29.2		46.7	75 41.0	10.4	18 40.3	2.7	56.0	S 50	18 08	18 40	19 19	08 02	08 39	09 20	
	11	347 29.4		47.7	90 10.4	10.3	18 43.0	2.6	55.9	52	18 09	18 43	19 23	07 57	08 32	09 12	
	12	2 29.6	S	2 48.7	104 39.7	10.4	N 18 45.6	2.6	55.9	54	18 10	18 46	19 29	07 50	08 24	09 04	
	13	17 29.8		49.6	119 09.1	10.4	18 48.2	2.4	55.9	56	18 11	18 49	19 34	07 43	08 16	08 54	
	14	32 30.0		50.6	133 38.5	10.5	18 50.6	2.3	55.9	58	18 13	18 53	19 41	07 36	08 06	08 43	
	15	47 30.2	..	51.6	148 08.0	10.4	18 52.9	2.3	55.8	S 60	18 15	18 57	19 49	07 27	07 55	08 30	
	16	62 30.4		52.5	162 37.4	10.5	18 55.2	2.1	55.8	Day	SUN		MOON				Phase
	17	77 30.6		53.5	177 06.9	10.5	18 57.3	2.0	55.8		Egn						

G.M.T.		ARIES		VENUS -3.4		MARS +1.8		JUPITER -2.0		SATURN +0.7		STARS		
		G.H.A.	G.H.A.	Dec.	G.H.A.	Dec.	G.H.A.	Dec.	G.H.A.	Dec.	Name	S.H.A.	Dec.	
SUNDAY	00	9 29.1	208 30.8 N	9 15.7	162 04.2 S	11 09.5	69 52.4 S	21 20.3	74 21.3 S	21 40.8	Acamar	315 47.7	S 40 27.3	
	01	24 31.6	223 30.4	14.6	177 05.0	10.1	84 54.8	20.3	89 23.7	40.8	Achernar	335 55.3	S 57 25.8	
	02	39 34.1	238 29.9	13.5	192 05.9	10.7	99 57.2	20.3	104 26.2	40.8	Acrux	173 53.7	S 62 53.1	
	03	54 36.5	253 29.5	12.5	207 06.8	11.3	114 59.6	20.3	119 28.6	40.8	Adhara	255 43.3	S 28 55.0	
	04	69 39.0	268 29.1	11.4	222 07.6	12.0	130 02.0	20.3	134 31.1	40.8	Aldebaran	291 34.2	N 16 25.9	
	05	84 41.5	283 28.6	10.3	237 08.5	12.6	145 04.4	20.2	149 33.5	40.8				
	06	99 43.9	298 28.2 N	9 09.2	252 09.4 S	11 13.2	160 06.8 S	21 20.2	164 36.0 S	21 40.8	Alioth	166 55.6	N 56 10.2	
	07	114 46.4	313 27.8	08.2	267 10.2	13.8	175 09.2	20.2	179 38.4	40.8	Alkaid	153 30.2	N 49 30.5	
	08	129 48.9	328 27.3	07.1	282 11.1	14.4	190 11.6	20.2	194 40.9	40.8	Al Na'ir	28 32.5	S 47 08.9	
	09	144 51.3	343 26.9	06.0	297 11.9	15.1	205 14.0	20.2	209 43.3	40.8	Alnilam	276 26.0	S 1 13.5	
	10	159 53.8	358 26.5	04.9	312 12.8	15.7	220 16.4	20.2	224 45.8	40.8	Alphard	218 34.7	S 8 29.4	
	11	174 56.2	13 26.1	03.9	327 13.7	16.3	235 18.8	20.2	239 48.2	40.8				
	12	189 58.7	28 25.6 N	9 02.8	342 14.5 S	11 16.9	250 21.2 S	21 20.2	254 50.7 S	21 40.8	Alphecca	126 44.4	N 26 50.9	
	13	205 01.2	43 25.2	01.7	357 15.4	17.5	265 23.6	20.1	269 53.1	40.8	Alpheratz	358 23.7	N 28 52.8	
	14	220 03.6	58 24.8	9 00.6	12 16.2	18.2	280 26.0	20.1	284 55.6	40.8	Altair	62 46.3	N 8 46.2	
	15	235 06.1	73 24.3	8 59.6	27 17.1	18.8	295 28.4	20.1	299 58.0	40.8	Ankaa	353 53.9	S 42 30.8	
	16	250 08.6	88 23.9	58.5	42 18.0	19.4	310 30.8	20.1	315 00.5	40.8	Antares	113 14.5	S 26 20.8	
	17	265 11.0	103 23.5	57.4	57 18.8	20.0	325 33.2	20.1	330 02.9	40.8				
	18	280 13.5	118 23.0 N	8 56.3	72 19.7 S	11 20.6	340 35.6 S	21 20.1	345 05.3 S	21 40.8	Arcturus	146 31.7	N 19 23.1	
	19	295 16.0	133 22.6	55.2	87 20.5	21.2	355 38.0	20.1	0 07.8	40.8	Atria	108 51.7	S 68 57.7	
	20	310 18.4	148 22.2	54.1	102 21.4	21.9	10 40.4	20.1	15 10.2	40.8	Avior	234 34.2	S 59 22.9	
	21	325 20.9	163 21.8	53.1	117 22.3	22.5	25 42.8	20.0	30 12.7	40.8	Bellatrix	279 13.9	N 6 19.0	
	22	340 23.3	178 21.3	52.0	132 23.1	23.1	40 45.1	20.0	45 15.1	40.8	Betelgeuse	271 43.6	N 7 24.0	
	23	355 25.8	193 20.9	50.9	147 24.0	23.7	55 47.5	20.0	60 17.6	40.8				
MONDAY	00	10 28.3	208 20.5 N	8 49.8	162 24.8 S	11 24.3	70 49.9 S	21 20.0	75 20.0 S	21 40.8	Canopus	264 13.5	S 52 40.2	
	01	25 30.7	223 20.0	48.7	177 25.7	25.0	85 52.3	20.0	90 22.5	40.8	Capella	281 32.1	N 45 57.4	
	02	40 33.2	238 19.6	47.6	192 26.6	25.6	100 54.7	20.0	105 24.9	40.8	Deneb	49 57.9	N 45 08.9	
	03	55 35.7	253 19.2	46.6	207 27.4	26.2	115 57.1	20.0	120 27.4	40.8	Denebola	183 13.9	N 14 47.3	
	04	70 38.1	268 18.8	45.5	222 28.3	26.8	130 59.5	19.9	135 29.8	40.8	Diphda	349 34.8	S 18 11.7	
	05	85 40.6	283 18.3	44.4	237 29.1	27.4	146 01.9	19.9	150 32.2	40.8				
	06	100 43.1	298 17.9 N	8 43.3	252 30.0 S	11 28.0	161 04.3 S	21 19.9	165 34.7 S	21 40.8	Dubhe	194 40.3	N 61 57.5	
	07	115 45.5	313 17.5	42.2	267 30.8	28.7	176 06.7	19.9	180 37.1	40.8	Elnath	279 02.0	N 28 34.5	
	08	130 48.0	328 17.0	41.1	282 31.7	29.3	191 09.1	19.9	195 39.6	40.8	Eltanin	91 04.4	N 51 30.0	
	09	145 50.5	343 16.6	40.0	297 32.6	29.9	206 11.5	19.9	210 42.0	40.8	Enif	34 25.3	N 9 42.1	
	10	160 52.9	358 16.2	39.0	312 33.4	30.5	221 13.8	19.9	225 44.5	40.8	Fomalhaut	16 06.8	S 29 49.5	
	11	175 55.4	13 15.8	37.9	327 34.3	31.1	236 16.2	19.8	240 46.9	40.8				
	12	190 57.8	28 15.3 N	8 36.8	342 35.1 S	11 31.7	251 18.6 S	21 19.8	255 49.3 S	21 40.8	Gacrux	172 45.1	S 56 53.8	
	13	206 00.3	43 14.9	35.7	357 36.0	32.4	266 21.0	19.8	270 51.8	40.8	Gienah	176 32.9	S 17 19.6	
	14	221 02.8	58 14.5	34.6	12 36.8	33.0	281 23.4	19.8	285 54.2	40.8	Hadar	149 44.0	S 60 11.3	
	15	236 05.2	73 14.1	33.5	27 37.7	33.6	296 25.8	19.8	300 56.7	40.8	Hamal	328 44.6	N 23 16.9	
	16	251 07.7	88 13.6	32.4	42 38.5	34.2	311 28.2	19.8	315 59.1	40.8	Kaus Aust.	84 35.7	S 34 24.2	
	17	266 10.2	103 13.2	31.3	57 39.4	34.8	326 30.6	19.8	331 01.6	40.8				
	18	281 12.6	118 12.8 N	8 30.2	72 40.3 S	11 35.4	341 32.9 S	21 19.7	346 04.0 S	21 40.8	Kochab	137 19.3	N 74 19.0	
	19	296 15.1	133 12.4	29.1	87 41.1	36.0	356 35.3	19.7	1 06.4	40.8	Markab	14 17.0	N 15 00.1	
	20	311 17.6	148 11.9	28.1	102 42.0	36.7	11 37.7	19.7	16 08.9	40.8	Menkar	314 55.7	N 3 56.4	
	21	326 20.0	163 11.5	27.0	117 42.8	37.3	26 40.1	19.7	31 11.3	40.8	Menkent	148 54.1	S 36 10.8	
	22	341 22.5	178 11.1	25.9	132 43.7	37.9	41 42.5	19.7	46 13.8	40.8	Miaplacidus	221 48.5	S 69 33.3	
	23	356 25.0	193 10.7	24.8	147 44.5	38.5	56 44.9	19.7	61 16.2	40.8				
TUESDAY	00	11 27.4	208 10.2 N	8 23.7	162 45.4 S	11 39.1	71 47.3 S	21 19.6	76 18.6 S	21 40.8	Mirfak	309 36.1	N 49 43.4	
	01	26 29.9	223 09.8	22.6	177 46.2	39.7	86 49.6	19.6	91 21.1	40.8	Nunki	76 46.8	S 26 20.7	
	02	41 32.3	238 09.4	21.5	192 47.1	40.4	101 52.0	19.6	106 23.5	40.8	Peacock	54 20.6	S 56 51.7	
	03	56 34.8	253 09.0	20.4	207 47.9	41.0	116 54.4	19.6	121 26.0	40.8	Pollux	244 15.7	N 28 07.1	
	04	71 37.3	268 08.5	19.3	222 48.8	41.6	131 56.8	19.6	136 28.4	40.8	Procyon	245 40.8	N 5 19.5	
	05	86 39.7	283 08.1	18.2	237 49.6	42.2	146 59.2	19.6	151 30.8	40.8				
	06	101 42.2	298 07.7 N	8 17.1	252 50.5 S	11 42.8	162 01.6 S	21 19.5	166 33.3 S	21 40.8	Rasalhague	96 42.9	N 12 35.5	
	07	116 44.7	313 07.3	16.0	267 51.3	43.4	177 03.9	19.5	181 35.7	40.8	Regulus	208 25.4	N 12 09.4	
	08	131 47.1	328 06.9	14.9	282 52.2	44.0	192 06.3	19.5	196 38.2	40.8	Rigel	281 49.6	S 8 14.6	
	09	146 49.6	343 06.4	13.8	297 53.1	44.7	207 08.7	19.5	211 40.6	40.8	Rigel Kent.	140 45.8	S 60 40.6	
	10	161 52.1	358 06.0	12.7	312 53.9	45.3	222 11.1	19.5	226 43.0	40.8	Sabik	102 57.6	S 15 40.6	
	11	176 54.5	13 05.6	11.6	327 54.8	45.9	237 13.5	19.5	241 45.5	40.8				
	12	191 57.0	28 05.2 N	8 10.5	342 55.6 S	11 46.5	252 15.8 S	21 19.5	256 47.9 S	21 40.8	Schedar	350 24.6	N 56 19.6	
	13	206 59.4	43 04.7	09.4	357 56.5	47.1	267 18.2	19.4	271 50.4	40.8	Shaula	97 15.2	S 37 04.6	
	14	222 01.9	58 04.3	08.3	12 57.3	47.7	282 20.6	19.4	286 52.8	40.8	Sirius	259 08.2	S 16 39.6	
	15	237 04.4	73 03.9	07.2	27 58.2	48.3	297 23.0	19.4	301 55.2	40.8	Spica	159 12.8	S 10 57.5	
	16	252 06.8	88 03.5	06.1	42 59.0	48.9	312 25.4	19.4	316 57.7	40.8	Suhail	223 21.5	S 43 16.4	
	17	267 09.3	103 03.1	05.0	57 59.9	49.6	327 27.7	19.4	332 00.1	40.8				
	18	282 11.8	118 02.6 N	8 03.9	73 00.7 S	11 50.2	342 30.1 S	21 19.4	347 02.6 S	21 40.8	Vega	81 05.5	N 38 45.2	
	19	297 14.2	133 02.2	02.8	88 01.6	50.8	357 32.5	19.3	2 05.0	40.8	Zuben'ubi	137 49.1	S 15 52.8	
	20	312 16.7	148 01.8	01.7	103 02.4	51.4	12 34.9	19.3	17 07.4	40.8				
	21	327 19.2	163 01.4	00.6	118 03.3	52.0	27 37.3	19.3	32 09.9	40.8				
	22	342 21.6	178 01.0	7 59.5	133 04.1	52.6	42 39.6	19.3	47 12.3	40.8	Venus	197 52.2	10 07	
	23	357 24.1	193 00.5	58.4	148 05.0	53.2	57 42.0	19.3	62 14.7	40.8	Mars	151 56.5	13 10	
Mer. Pass. 23 14.3		v -0.4 d 1.1		v 0.9 d 0.6		v 2.4 d 0.0		v 2.4 d 0.0		Jupiter			60 21.6	19 14
										Saturn			64 51.7	18 56

G.M.T.	SUN			MOON				Lat.	Twilight		Sun-rise	Moonrise																			
	G.H.A.	Dec.		G.H.A.	<i>v</i>	Dec.	<i>d</i>		H.P.	Naut.		Civil	1	2	3	4															
d	h	°	'	°	'	°	'	°	'	h	m	h	m	h	m	h	m														
SUNDAY	00	182	32.0	S	3	00.3	278	33.8	10.7	N	19	09.4	1.4	55.6	N	70	04	05	05	18	06	18	19	11	20	25	21	55	23	28	
	01	197	32.2			01.3	293	03.5	10.7			19	10.8	1.2	55.5	68	04	14	05	20	06	15	20	08	21	12	22	28	23	52	
	02	212	32.4			02.3	307	33.2	10.7			19	12.0	1.2	55.5	66	04	21	05	22	06	13	20	41	21	42	22	53	24	09	
	03	227	32.6			03.2	322	02.9	10.7			19	13.2	1.0	55.5	64	04	27	05	23	06	11	21	06	22	04	23	11	24	24	
	04	242	32.8			04.2	336	32.6	10.8			19	14.2	1.0	55.4	62	04	33	05	25	06	09	21	25	22	22	23	27	24	36	
	05	257	33.0			05.2	351	02.4	10.8			19	15.2	0.8	55.4	60	04	37	05	26	06	07	21	41	22	37	23	40	24	47	
	06	272	33.2	S	3	06.1	5	32.2	10.8	N	19	16.0	0.8	55.4	N	58	04	41	05	27	06	06	21	54	22	50	23	51	24	56	
	07	287	33.4			07.1	20	02.0	10.8			19	16.8	0.6	55.4	56	04	44	05	27	06	04	22	06	23	01	24	00	00	00	
	08	302	33.6			08.1	34	31.8	10.9			19	17.4	0.6	55.3	54	04	47	05	28	06	03	22	16	23	10	24	00	00	00	
	09	317	33.8			09.0	49	01.7	10.9			19	18.0	0.4	55.3	52	04	49	05	28	06	02	22	25	23	19	24	16	00	16	
MONDAY	10	332	34.0			10.0	63	31.6	10.9			19	18.4	0.4	55.3	50	04	51	05	29	06	01	22	33	23	26	24	23	00	23	
	11	347	34.2			11.0	78	01.5	11.0			19	18.8	0.3	55.3	45	04	55	05	30	05	59	22	50	23	43	24	38	00	38	
	12	2	34.4	S	3	12.0	92	31.5	11.0	N	19	19.1	0.1	55.2	N	40	04	58	05	30	05	57	23	04	23	56	24	50	00	50	
	13	17	34.6			12.9	107	01.5	11.0			19	19.2	0.1	55.2	35	05	01	05	30	05	55	23	16	24	07	00	07	01	00	
	14	32	34.8			13.9	121	31.5	11.0			19	19.3	0.0	55.2	30	05	02	05	30	05	54	23	26	24	17	00	17	01	09	
	15	47	35.0			14.9	136	01.5	11.1			19	19.3	0.1	55.2	20	05	04	05	29	05	51	23	44	24	34	00	34	01	24	
	16	62	35.2			15.8	150	31.6	11.1			19	19.2	0.2	55.1	N	10	05	03	05	28	05	49	24	00	00	00	49	01	37	
	17	77	35.4			16.8	165	01.7	11.1			19	19.0	0.3	55.1	0	05	01	05	25	05	46	24	15	00	15	01	03	01	50	
	18	92	35.6	S	3	17.8	179	31.8	11.2	N	19	18.7	0.4	55.1	S	10	04	58	05	23	05	44	24	29	00	29	01	17	02	02	
	19	107	35.8			18.7	194	02.0	11.2			19	18.3	0.5	55.1	20	04	53	05	19	05	41	24	45	00	45	01	32	02	16	
TUESDAY	20	122	36.0			19.7	208	32.2	11.2			19	17.8	0.6	55.0	30	04	46	05	14	05	38	00	13	01	03	01	49	02	31	
	21	137	36.2			20.7	223	02.4	11.3			19	17.2	0.7	55.0	35	04	40	05	10	05	36	00	23	01	13	01	59	02	40	
	22	152	36.4			21.7	237	32.7	11.2			19	16.5	0.8	55.0	40	04	34	05	06	05	33	00	35	01	25	02	10	02	50	
	23	167	36.6			22.6	252	02.9	11.4			19	15.7	0.8	55.0	45	04	26	05	01	05	31	00	49	01	39	02	23	03	02	
	00	182	36.8	S	3	23.6	266	33.3	11.3	N	19	14.9	1.0	54.9	S	50	04	16	04	55	05	28	01	07	01	56	02	39	03	16	
	01	197	37.0			24.6	281	03.6	11.4			19	13.9	1.0	54.9	52	04	11	04	52	05	26	01	15	02	05	02	47	03	22	
	02	212	37.2			25.5	295	34.0	11.4			19	12.9	1.2	54.9	54	04	06	04	49	05	25	01	24	02	13	02	55	03	30	
	03	227	37.4			26.5	310	04.4	11.4			19	11.7	1.2	54.9	56	03	59	04	45	05	23	01	34	02	24	03	05	03	38	
	04	242	37.6			27.5	324	34.8	11.5			19	10.5	1.3	54.9	58	03	52	04	41	05	21	01	46	02	35	03	15	03	47	
	05	257	37.8			28.4	339	05.3	11.5			19	09.2	1.5	54.8	S	60	03	44	04	36	05	18	01	59	02	49	03	27	03	58
WEDNESDAY	06	272	38.0	S	3	29.4	353	35.8	11.5	N	19	07.7	1.5	54.8																	
	07	287	38.2			30.4	8	06.3	11.6			19	06.2	1.6	54.8	Lat.	Sun-set	Twilight					Moonset								
	08	302	38.4			31.3	22	36.9	11.6			19	04.6	1.7	54.8																
	09	317	38.6			32.3	37	07.5	11.6			19	02.9	1.7	54.8																
	10	332	38.8			33.3	51	38.1	11.7			19	01.2	1.9	54.7																
	11	347	39.0			34.3	66	08.8	11.7			18	59.3	2.0	54.7																
	12	2	39.2	S	3	35.2	80	39.5	11.7	N	18	57.3	2.0	54.7	N	72	17	15	18	21	19	42	□	□	18	25	18	03			
	13	17	39.4			36.2	95	10.2	11.8			18	55.3	2.1	54.7	N	70	17	18	18	19	19	31	16	53	17	20	17	28	17	30
	14	32	39.6			37.2	109	41.0	11.8			18	53.2	2.3	54.7	68	17	22	18	17	19	22	15	56	16	34	16	55	17	06	
	15	47	39.8			38.1	124	11.8	11.8			18	50.9	2.3	54.7	66	17	24	18	15	19	15	15	23	16	03	16	30	16	48	
THURSDAY	16	62	40.0			39.1	138	42.6	11.9			18	48.6	2.4	54.6	64	17	27	18	14	19	09	14	58	15	41	16	11	16	32	
	17	77	40.2			40.1	153	13.5	11.9			18	46.2	2.5	54.6	62	17	29	18	13	19	04	14	39	15	22	15	55	16	20	
	18	92	40.4	S	3	41.0	167	44.4	11.9	N	18	43.7	2.5	54.6	60	17	31	18	12	19	00	14	23	15	07	15	42	16	09		
	19	107	40.6			42.0	182	15.3	12.0			18	41.2	2.7	54.6	N	58	17	32	18	11	18	57	14	10	14	55	15	30	15	59
	20	122	40.8			43.0	196	46.3	12.0			18	38.5	2.8	54.6	56	17	34	18	10	18	54	13	58	14	43	15	21	15	51	
	21	137	41.0			43.9	211	17.3	12.0			18	35.7	2.8	54.5	54	17	35	18	10	18	51	13	48	14	34	15	12	15	44	
	22	152	41.2			44.9	225	48.3	12.1			18	32.9	2.9	54.5	52	17	36	18	09	18	49	13	39	14	25	15	04	15	37	
	23	167	41.4			45.9	240	19.4																							

	ARIES			VENUS -3-4			MARS +1-8			JUPITER -2-0			SATURN +0-7			STARS		
G.M.T.																		
	G.H.A.	G.H.A.	Dec.	G.H.A.	Dec.	G.H.A.	Dec.	G.H.A.	Dec.	G.H.A.	Dec.	Name	S.H.A.	Dec.				
4	00	12 26.6	208 00.1 N 7 57.3	163 05.8 S 11 53.8		72 44.4 S 21 19.2		77 17.2 S 21 40.8		Acamar	315 47.7	S 40 27.3						
	01	27 29.0	222 59.7	56.2	178 06.7	54.5	87 46.8	19.2	92 19.6	40.8	Achernar	335 55.3	S 57 25.8					
	02	42 31.5	237 59.3	55.1	193 07.5	55.1	102 49.1	19.2	107 22.1	40.8	Acrux	173 53.7	S 62 53.1					
	03	57 33.9	252 58.9	54.0	208 08.3	55.7	117 51.5	19.2	122 24.5	40.8	Adhara	255 43.3	S 28 55.0					
	04	72 36.4	267 58.4	52.8	223 09.2	56.3	132 53.9	19.2	137 26.9	40.8	Aldebaran	291 34.1	N 16 25.9					
WEDNESDAY	05	87 38.9	282 58.0	51.7	238 10.0	56.9	147 56.3	19.2	152 29.4	40.8								
	06	102 41.3	297 57.6 N 7 50.6	253 10.9 S 11 57.5	162 58.6 S 21 19.1	167 31.8 S 21 40.8	Alioth	166 55.6	N 56 10.2									
	07	117 43.8	312 57.2	49.5	268 11.7	58.1	178 01.0	19.1	182 34.2	40.8	Alkaid	153 30.2	N 49 30.5					
	08	132 46.3	327 56.8	48.4	283 12.6	58.7	193 03.4	19.1	197 36.7	40.8	Al Na'ir	28 32.5	S 47 08.9					
	09	147 48.7	342 56.3	47.3	298 13.4	59.4	208 05.8	19.1	212 39.1	40.8	Alnilam	276 26.0	S 1 13.5					
	10	162 51.2	357 55.9	46.2	313 14.3	60.0	223 08.1	19.1	227 41.5	40.7	Alphard	218 34.7	S 8 29.4					
	11	177 53.7	12 55.5	45.1	328 15.1	60.6	238 10.5	19.1	242 44.0	40.7								
	12	192 56.1	27 55.1 N 7 44.0	343 16.0 S 12 01.2	253 12.9 S 21 19.0	257 46.4 S 21 40.7	Alphecca	126 44.4	N 26 50.9									
	13	207 58.6	42 54.7	42.9	358 16.8	61.8	268 15.2	19.0	272 48.8	40.7	Alpheratz	358 23.7	N 28 52.8					
	14	223 01.1	57 54.3	41.8	13 17.7	62.4	283 17.6	19.0	287 51.3	40.7	Altair	62 46.3	N 8 46.2					
	15	238 03.5	72 53.8	40.6	28 18.5	63.0	298 20.0	19.0	302 53.7	40.7	Ankaa	353 53.9	S 42 30.8					
	16	253 06.0	87 53.4	39.5	43 19.3	63.6	313 22.4	19.0	317 56.1	40.7	Antares	113 14.5	S 26 20.8					
	17	268 08.4	102 53.0	38.4	58 20.2	64.2	328 24.7	19.0	332 58.6	40.7								
	18	283 10.9	117 52.6 N 7 37.3	73 21.0 S 12 04.9	343 27.1 S 21 18.9	348 01.0 S 21 40.7	Arcturus	146 31.7	N 19 23.1									
	19	298 13.4	132 52.2	36.2	88 21.9	65.5	358 29.5	18.9	3 03.4	40.7	Atria	108 51.7	S 68 57.7					
	20	313 15.8	147 51.8	35.1	103 22.7	66.1	13 31.8	18.9	18 05.9	40.7	Avior	234 34.2	S 59 22.9					
	21	328 18.3	162 51.3	34.0	118 23.6	66.7	28 34.2	18.9	33 08.3	40.7	Bellatrix	279 13.9	N 6 19.0					
	22	343 20.8	177 50.9	32.9	133 24.4	67.3	43 36.6	18.9	48 10.7	40.7	Betelgeuse	271 43.6	N 7 24.0					
	23	358 23.2	192 50.5	31.7	148 25.2	67.9	58 38.9	18.8	63 13.2	40.7								
	5	00	13 25.7	207 50.1 N 7 30.6	163 26.1 S 12 08.5	73 41.3 S 21 18.8	78 15.6 S 21 40.7	Canopus	264 13.5	S 52 40.2								
01		28 28.2	222 49.7	29.5	178 26.9	69.1	88 43.7	18.8	93 18.0	40.7	Capella	281 32.1	N 45 57.4					
02		43 30.6	237 49.3	28.4	193 27.8	69.7	103 46.0	18.8	108 20.5	40.7	Deneb	49 57.9	N 45 08.9					
03		58 33.1	252 48.9	27.3	208 28.6	70.3	118 48.4	18.8	123 22.9	40.7	Denebola	183 13.9	N 14 47.3					
04		73 35.5	267 48.4	26.2	223 29.5	70.9	133 50.8	18.7	138 25.3	40.7	Diphda	349 34.8	S 18 11.7					
	05	88 38.0	282 48.0	25.0	238 30.3	71.6	148 53.1	18.7	153 27.8	40.7								
	06	103 40.5	297 47.6 N 7 23.9	253 31.1 S 12 12.2	163 55.5 S 21 18.7	168 30.2 S 21 40.7	Dubhe	194 40.3	N 61 57.4									
	07	118 42.9	312 47.2	22.8	268 32.0	72.8	178 57.9	18.7	183 32.6	40.7	Elnath	279 02.0	N 28 34.5					
	08	133 45.4	327 46.8	21.7	283 32.8	73.4	194 00.2	18.7	198 35.1	40.7	Eltanin	91 04.5	N 51 30.0					
	09	148 47.9	342 46.4	20.6	298 33.7	74.0	209 02.6	18.7	213 37.5	40.7	Enif	34 25.3	N 9 42.1					
THURSDAY	10	163 50.3	357 46.0	19.5	313 34.5	74.6	224 05.0	18.6	228 39.9	40.7	Fomalhaut	16 06.8	S 29 49.5					
	11	178 52.8	12 45.5	18.3	328 35.3	75.2	239 07.3	18.6	243 42.3	40.7								
	12	193 55.3	27 45.1 N 7 17.2	343 36.2 S 12 15.8	254 09.7 S 21 18.6	258 44.8 S 21 40.7	Gacrux	172 45.1	S 56 53.8									
	13	208 57.7	42 44.7	16.1	358 37.0	76.4	269 12.1	18.6	273 47.2	40.7	Gienah	176 32.9	S 17 19.6					
	14	224 00.2	57 44.3	15.0	13 37.9	77.0	284 14.4	18.6	288 49.6	40.7	Hadar	149 44.1	S 60 11.3					
	15	239 02.7	72 43.9	13.9	28 38.7	77.6	299 16.8	18.5	303 52.1	40.7	Hamal	328 44.6	N 23 16.9					
	16	254 05.1	87 43.5	12.7	43 39.5	78.2	314 19.1	18.5	318 54.5	40.7	Kaus Aust.	84 35.8	S 34 24.2					
	17	269 07.6	102 43.1	11.6	58 40.4	78.8	329 21.5	18.5	333 56.9	40.7								
	18	284 10.0	117 42.7 N 7 10.5	73 41.2 S 12 19.5	344 23.9 S 21 18.5	348 59.4 S 21 40.7	Kochab	137 19.4	N 74 19.0									
	19	299 12.5	132 42.2	9.4	88 42.1	79.1	359 26.2	18.5	4 01.8	40.6	Markab	14 17.0	N 15 00.1					
	20	314 15.0	147 41.8	8.2	103 42.9	79.7	14 28.6	18.4	19 04.2	40.6	Menkar	314 55.7	N 3 56.4					
	21	329 17.4	162 41.4	7.1	118 43.7	80.3	29 31.0	18.4	34 06.6	40.6	Menkent	148 54.1	S 36 10.8					
	22	344 19.9	177 41.0	6.0	133 44.6	80.9	44 33.3	18.4	49 09.1	40.6	Miaplacidus	221 48.5	S 69 33.3					
	23	359 22.4	192 40.6	4.9	148 45.4	81.5	59 35.7	18.4	64 11.5	40.6								
	6	00	14 24.8	207 40.2 N 7 03.8	163 46.2 S 12 23.1	74 38.0 S 21 18.4	79 13.9 S 21 40.6	Mirfak	309 36.0	N 49 43.4								
01		29 27.3	222 39.8	0.6	178 47.1	23.7	89 40.4	18.3	94 16.4	40.6	Nunki	76 46.8	S 26 20.7					
02		44 29.8	237 39.4	0.5	193 47.9	24.3	104 42.7	18.3	109 18.8	40.6	Peacock	54 20.6	S 56 51.7					
03		59 32.2	252 38.9	7 00.4	208 48.8	24.9	119 45.1	18.3	124 21.2	40.6	Pollux	244 15.6	N 28 07.1					
04		74 34.7	267 38.5	6 59.3	223 49.6	25.5	134 47.5	18.3	139 23.6	40.6	Procyon	245 40.7	N 5 19.5					
	05	89 37.1	282 38.1	58.1	238 50.4	26.1	149 49.8	18.2	154 26.1	40.6								
	06	104 39.6	297 37.7 N 6 57.0	253 51.3 S 12 26.7	164 52.2 S 21 18.2	169 28.5 S 21 40.6	Rasalhague	96 42.9	N 12 35.5									
	07	119 42.1	312 37.3	55.9	268 52.1	27.3	179 54.5	18.2	184 30.9	40.6	Regulus	208 25.4	N 12 09.4					
	08	134 44.5	327 36.9	54.7	283 52.9	27.9	194 56.9	18.2	199 33.3	40.6	Rigel	281 49.5	S 8 14.6					
	09	149 47.0	342 36.5	53.6	298 53.8	28.5	209 59.2	18.2	214 35.8	40.6	Rigel Kent.	140 45.8	S 60 40.6					
	10	164 49.5	357 36.1	52.5	313 54.6	29.1	225 01.6	18.1	229 38.2	40.6	Sabik	102 57.6	S 15 40.6					
	11	179 51.9	12 35.7	51.4	328 55.4	29.7	240 04.0	18.1	244 40.6	40.6								
	12	194 54.4	27 35.3 N 6 50.2	343 56.3 S 12 30.4	255 06.3 S 21 18.1	259 43.0 S 21 40.6	Schedar	350 24.6	N 56 19.7									
	13	209 56.9	42 34.9	49.1	358 57.1	31.0	270 08.7	18.1	274 45.5	40.6	Shaula	97 15.2	S 37 04.6					
	14	224 59.3	57 34.4	48.0	13 58.0	31.6	285 11.0	18.1	289 47.9	40.6	Sirius	259 08.2	S 16 39.6					
	15	240 01.8	72 34.0	46.8	28 58.8	32.2	300 13.4	18.0	304 50.3	40.6	Spica	159 12.8	S 10 57.5					
	16	255 04.3	87 33.6	45.7	43 59.6	32.8	315 15.7	18.0	319 52.7	40.6	Suhail	223 21.5	S 43 16.4					
	17	270 06.7	102 33.2	44.6	59 00.5	33.4	330 18.1	18.0	334 55.2	40.6								
	18	285 09.2	117 32.8 N 6 43.6															

G.M.T.		SUN		MOON				Lat.	Twilight		Sun-rise	Moonrise									
		G.H.A.	Dec.	G.H.A.	φ	Dec.	d		H.P.	Naut.		Civil	4	5	6	7					
d	h	°	'	°	'	°	'	°	'	°	'	h	m	h	m	h	m	h	m		
4	00	182	46.2	S	4	10.0	243	27.4	13.0	N 16	50.6	4.9	54.2	N 72	04 08	05 28	06 36	22 56	24 41	00 41	02 21
	01	197	46.4		11.0	257	59.4	13.0		16 45.7	5.1	54.2	N 70	04 18	05 30	06 31	23 28	25 01	01 01	02 33	
	02	212	46.6		12.0	272	31.4	13.0		16 40.6	5.1	54.2	68	04 25	05 31	06 26	23 52	25 17	01 17	02 42	
	03	227	46.8		12.9	287	03.4	13.1		16 35.5	5.2	54.2	66	04 31	05 31	06 23	24 09	00 09	01 29	02 50	
	04	242	47.0		13.9	301	35.5	13.1		16 30.3	5.3	54.2	64	04 37	05 32	06 20	24 24	00 24	01 40	02 57	
	05	257	47.2		14.9	316	07.6	13.1		16 25.0	5.4	54.2	62	04 41	05 33	06 17	24 36	00 36	01 49	03 03	
	06	272	47.4	S	4	15.8	330	39.7	13.2	N 16	19.6	5.4	54.2	60	04 44	05 33	06 14	24 47	00 47	01 56	03 08
	07	287	47.6		16.8	345	11.9	13.2		16 14.2	5.5	54.2	N 58	04 47	05 33	06 12	24 56	00 56	02 03	03 12	
	08	302	47.8		17.8	359	44.1	13.2		16 08.7	5.5	54.2	56	04 50	05 33	06 10	00 00	01 03	02 09	03 19	
	09	317	48.0		18.7	14	16.3	13.3		16 03.2	5.7	54.2	54	04 52	05 33	06 09	00 09	01 10	02 14	03 19	
WEDNESDAY	10	332	48.2		19.7	28	48.6	13.3		15 57.5	5.7	54.2	52	04 54	05 33	06 07	00 16	01 17	02 19	03 22	
	11	347	48.4		20.7	43	20.9	13.3		15 51.8	5.7	54.1	50	04 56	05 33	06 06	00 23	01 22	02 23	03 25	
	12	2	48.5	S	4	21.6	57	53.2	13.3	N 15	46.1	5.9	54.1	45	04 59	05 33	06 03	00 38	01 34	02 33	03 32
	13	17	48.7		22.6	72	25.5	13.4		15 40.2	5.9	54.1	N 40	05 01	05 33	06 00	00 50	01 44	02 40	03 37	
	14	32	48.9		23.6	86	57.9	13.5		15 34.3	5.9	54.1	35	05 03	05 32	05 57	01 00	01 53	02 47	03 41	
	15	47	49.1		24.5	101	30.4	13.4		15 28.4	6.1	54.1	30	05 04	05 31	05 55	01 09	02 01	02 53	03 45	
	16	62	49.3		25.5	116	02.8	13.5		15 22.3	6.1	54.1	20	05 04	05 30	05 52	01 24	02 13	03 03	03 52	
	17	77	49.5		26.4	130	35.3	13.5		15 16.2	6.2	54.1	N 10	05 03	05 27	05 48	01 37	02 25	03 12	03 58	
	18	92	49.7	S	4	27.4	145	07.8	13.6	N 15	10.0	6.2	54.1	0	05 00	05 24	05 45	01 50	02 35	03 20	04 03
	19	107	49.9		28.4	159	40.4	13.5		15 03.8	6.3	54.1	S 10	04 56	05 21	05 42	02 02	02 46	03 28	04 09	
THURSDAY	20	122	50.1		29.3	174	12.9	13.6		14 57.5	6.4	54.1	20	04 50	05 16	05 38	02 16	02 57	03 37	04 15	
	21	137	50.3		30.3	188	45.5	13.7		14 51.1	6.4	54.1	30	04 42	05 10	05 34	02 31	03 10	03 47	04 22	
	22	152	50.4		31.3	203	18.2	13.6		14 44.7	6.5	54.1	35	04 36	05 06	05 31	02 40	03 17	03 52	04 25	
	23	167	50.6		32.2	217	50.8	13.7		14 38.2	6.6	54.1	40	04 29	05 01	05 29	02 50	03 26	03 59	04 30	
	00	182	50.8	S	4	33.2	232	23.5	13.8	N 14	31.6	6.6	54.1	45	04 20	04 55	05 25	03 02	03 36	04 06	04 35
	01	197	51.0		34.2	246	56.3	13.7		14 25.0	6.7	54.1	S 50	04 09	04 48	05 21	03 16	03 48	04 15	04 41	
	02	212	51.2		35.1	261	29.0	13.8		14 18.3	6.7	54.1	52	04 03	04 45	05 19	03 22	03 53	04 19	04 43	
	03	227	51.4		36.1	276	01.8	13.8		14 11.6	6.8	54.1	54	04 03	04 41	05 17	03 30	03 59	04 24	04 46	
	04	242	51.6		37.1	290	34.6	13.8		14 04.8	6.9	54.1	56	03 50	04 37	05 15	03 38	04 06	04 29	04 50	
	05	257	51.8		38.0	305	07.4	13.9		13 57.9	6.9	54.1	58	03 42	04 32	05 12	03 47	04 13	04 35	04 54	
FRIDAY	06	272	51.9	S	4	39.0	319	40.3	13.9	N 13	51.0	7.0	54.1	S 60	03 33	04 27	05 09	03 58	04 22	04 41	04 58
	07	287	52.1		39.9	334	13.2	13.9		13 44.0	7.1	54.1									
	08	302	52.3		40.9	348	46.1	14.0		13 36.9	7.1	54.1	Lat.	Sun-set	Twilight	Moonset					
	09	317	52.5		41.9	3 19.1	14.0			13 29.8	7.2	54.1				4	5	6	7		
	10	332	52.7		42.8	17	52.1	14.0		13 22.6	7.2	54.1									
	11	347	52.9		43.8	32	25.1	14.0		13 15.4	7.3	54.1									
	12	2	53.1	S	4	44.8	46	58.1	14.0	N 13	08.1	7.3	54.1	N 72	16 59	18 06	19 26	18 03	17 52	17 42	17 34
	13	17	53.3		45.7	61	31.1	14.1		13 00.8	7.4	54.1	N 70	17 05	18 05	19 17	17 30	17 30	17 28	17 26	
	14	32	53.4		46.7	76	04.2	14.1		12 53.4	7.4	54.1	68	17 09	18 04	19 09	17 06	17 13	17 17	17 20	
	15	47	53.6		47.6	90	37.3	14.1		12 46.0	7.5	54.1	66	17 13	18 04	19 03	16 48	17 00	17 08	17 15	
SATURDAY	16	62	53.8		48.6	105	10.4	14.2		12 38.5	7.6	54.1	64	17 16	18 03	18 59	16 32	16 48	17 01	17 11	
	17	77	54.0		49.6	119	43.6	14.2		12 30.9	7.6	54.1	62	17 19	18 03	18 54	16 20	16 39	16 54	17 07	
	18	92	54.2	S	4	50.5	134	16.8	14.2	N 12	23.3	7.7	54.1	60	17 22	18 03	18 51	16 09	16 30	16 48	17 04
	19	107	54.4		51.5	148	50.0	14.2		12 15.6	7.7	54.1	N 58	17 24	18 03	18 48	15 59	16 23	16 43	17 01	
	20	122	54.6		52.4	163	23.2	14.2		12 07.9	7.8	54.1	56	17 26	18 03	18 46	15 51	16 16	16 38	16 58	
	21	137	54.7		53.4	177	56.4	14.3		12 00.1	7.8	54.1	54	17 27	18 02	18 44	15 44	16 11	16 34	16 56	
	22	152	54.9		54.4	192	29.7	14.3		11 52.3	7.9	54.1	52	17 29	18 02	18 42	15 37	16 05	16 30	16 54	
	23	167	55.1		55.3	207	03.0	14.3		11 44.4	7.9	54.1	50	17 30	18 03	18 40	15 31	16 01	16 27	16 52	
	00	182	55.3	S	4	56.3	221	36.3	14.3	N 11	36.5	8.0	54.1	45	17 34	18 03	18 37	15 18	15 50	16 20	16 47
	SUNDAY	01	197	55.5		57.3	236	09.6	14.4		11 28.5	8.0	54.1	N 40	17 36	18 03	18 35	15 07	15 42	16 13	16 44
02		212	55.7		58.2	250	43.0	14.4		11 20.5	8.1	54.1	35	17 39	18 04	18 33	14 58	15 34	16 08	16 40	
03		227	55.9		59.2	265	16.4	14.4		11 12.4	8.2	54.1	30	17 41	18 05	18 33	14 50	15 28	16 03	16 38	
04		242	56.0		00.1	279	49.8	14.4		11 04.2	8.1	54.1	20	17 45	18 07	18 32	14 36	15 17	15 55	16 33	
05		257	56.2		01.1	294	23.2	14.4		10 56.1	8.3	54.1	N 10	17 48	18 09	18 34	14 24	15 07	15 48	16 28	
06		272	56.4	S	5	02.1	308	56.6	14.5	N 10	47.8	8.2	54.2	0	17 52	18 12	18 37	14 12	14 57	15 41	16 24
07		287	56.6		03.0	323	30.1	14.4		10 39.6	8.4	54.2	S 10	17 55	18 16	18 41	14 01	14 48	15 34	16 20	
08		302	56.8		04.0	338	03.5	14.5		10 31.2	8.3	54.2	20	17 59	18 21	18 47	13 48	14 37	15 26	16 16	
09		317	57.0		04.9	352	37.0	14.5		10 22.9	8.4	54.2	30	18 03	18 28	18 56	13 33	14 26	15 18	16 11	
10		332	57.1		05.9	7	10.5	14.5		10 14.5	8.5	54.2	35	18 06	18 32	19 02	13 25	14 19	15 13	16 08	
MONDAY	11	347	57.3		06.9	21	44.0	14.6		10 06.0	8.5	54.2	40	18 09							

		ARIES		VENUS -3.4		MARS +1.8		JUPITER -2.0		SATURN +0.7		STARS			
G.M.T.		G.H.A.	G.H.A.	Dec.	G.H.A.	Dec.	G.H.A.	Dec.	G.H.A.	Dec.	G.H.A.	Dec.	Name	S.H.A.	Dec.
SATURDAY	7 00	15 24.0	207 30.4	N 6 36.7	164 06.3	S 12 37.6	75 34.5	S 21 17.8	80 12.1	S 21 40.6	Acamar	315 47.7	S 40 27.3		
	01	30 26.4	222 30.0	35.5	179 07.1	38.2	90 36.9	17.8	95 14.6	40.5	Achernar	335 55.3	S 57 25.8		
	02	45 28.9	237 29.6	34.4	194 07.9	38.8	105 39.2	17.8	110 17.0	40.5	Acrux	173 53.7	S 62 53.1		
	03	60 31.4	252 29.1	.. 33.3	209 08.8	.. 39.4	120 41.6	.. 17.8	125 19.4	.. 40.5	Adhara	255 43.3	S 28 55.0		
	04	75 33.8	267 28.7	32.1	224 09.6	40.0	135 43.9	17.8	140 21.8	40.5	Aldebaran	291 34.1	N 16 25.9		
	05	90 36.3	282 28.3	31.0	239 10.4	40.6	150 46.3	17.7	155 24.2	40.5					
	06	105 38.7	297 27.9	N 6 29.8	254 11.3	S 12 41.2	165 48.6	S 21 17.7	170 26.7	S 21 40.5	Alioth	166 55.6	N 56 10.2		
	07	120 41.2	312 27.5	28.7	269 12.1	41.8	180 51.0	17.7	185 29.1	40.5	Alkaid	153 30.2	N 49 30.5		
	08	135 43.7	327 27.1	27.6	284 12.9	42.4	195 53.3	17.7	200 31.5	40.5	Al Na'ir	28 32.5	S 47 08.9		
	09	150 46.1	342 26.7	.. 26.4	299 13.8	.. 43.0	210 55.7	.. 17.6	215 33.9	.. 40.5	Alnilam	276 26.0	S 1 13.5		
	10	165 48.6	357 26.3	25.3	314 14.6	43.6	225 58.0	17.6	230 36.4	40.5	Alphard	218 34.7	S 8 29.4		
	11	180 51.1	12 25.9	24.2	329 15.4	44.2	241 00.4	17.6	245 38.8	40.5					
	12	195 53.5	27 25.5	N 6 23.0	344 16.3	S 12 44.8	256 02.7	S 21 17.6	260 41.2	S 21 40.5	Alphecca	126 44.4	N 26 50.9		
	13	210 56.0	42 25.1	21.9	359 17.1	45.4	271 05.1	17.6	275 43.6	40.5	Alpheratz	358 23.7	N 28 52.8		
	14	225 58.5	57 24.7	20.8	14 17.9	46.0	286 07.4	17.5	290 46.0	40.5	Altair	62 46.3	N 8 46.2		
	15	241 00.9	72 24.3	.. 19.6	29 18.7	.. 46.6	301 09.8	.. 17.5	305 48.5	.. 40.5	Ankaa	353 53.9	S 42 30.8		
	16	256 03.4	87 23.9	18.5	44 19.6	47.2	316 12.1	17.5	320 50.9	40.5	Antares	113 14.5	S 26 20.8		
	17	271 05.9	102 23.5	17.3	59 20.4	47.8	331 14.5	17.5	335 53.3	40.5					
	18	286 08.3	117 23.1	N 6 16.2	74 21.2	S 12 48.4	346 16.8	S 21 17.4	350 55.7	S 21 40.5	Arcturus	146 31.8	N 19 23.1		
	19	301 10.8	132 22.7	15.1	89 22.1	49.0	1 19.2	17.4	5 58.1	40.5	Atria	108 51.8	S 68 57.7		
	20	316 13.2	147 22.3	13.9	104 22.9	49.6	16 21.5	17.4	21 00.6	40.5	Avior	234 34.2	S 59 22.9		
	21	331 15.7	162 21.9	.. 12.8	119 23.7	.. 50.2	31 23.8	.. 17.4	36 03.0	.. 40.5	Bellatrix	279 13.9	N 6 19.0		
	22	346 18.2	177 21.5	11.6	134 24.5	50.8	46 26.2	17.3	51 05.4	40.4	Betelgeuse	271 43.6	N 7 24.0		
	23	1 20.6	192 21.0	10.5	149 25.4	51.4	61 28.5	17.3	66 07.8	40.4					
SUNDAY	8 00	16 23.1	207 20.6	N 6 09.3	164 26.2	S 12 52.0	76 30.9	S 21 17.3	81 10.2	S 21 40.4	Canopus	264 13.4	S 52 40.2		
	01	31 25.6	222 20.2	08.2	179 27.0	52.6	91 33.2	17.3	96 12.7	40.4	Capella	281 32.1	N 45 57.4		
	02	46 28.0	237 19.8	07.1	194 27.8	53.2	106 35.6	17.2	111 15.1	40.4	Deneb	49 57.9	N 45 08.9		
	03	61 30.5	252 19.4	.. 05.9	209 28.7	.. 53.8	121 37.9	.. 17.2	126 17.5	.. 40.4	Denebola	183 13.9	N 14 47.3		
	04	76 33.0	267 19.0	04.8	224 29.5	54.4	136 40.2	17.2	141 19.9	40.4	Diphda	349 34.8	S 18 11.7		
	05	91 35.4	282 18.6	03.6	239 30.3	55.0	151 42.6	17.2	156 22.3	40.4					
	06	106 37.9	297 18.2	N 6 02.5	254 31.1	S 12 55.6	166 44.9	S 21 17.1	171 24.8	S 21 40.4	Dubhe	194 40.2	N 61 57.4		
	07	121 40.4	312 17.8	01.3	269 32.0	56.2	181 47.3	17.1	186 27.2	40.4	Elnath	279 01.9	N 28 34.5		
	08	136 42.8	327 17.4	6 00.2	284 32.8	56.8	196 49.6	17.1	201 29.6	40.4	Eltanin	91 04.5	N 51 30.0		
	09	151 45.3	342 17.0	5 59.0	299 33.6	.. 57.4	211 51.9	.. 17.1	216 32.0	.. 40.4	Enif	34 25.3	N 9 42.1		
	10	166 47.7	357 16.6	57.9	314 34.4	58.0	226 54.3	17.1	231 34.4	40.4	Fomalhaut	16 06.8	S 29 49.5		
	11	181 50.2	12 16.2	56.8	329 35.3	58.6	241 56.6	17.0	246 36.8	40.4					
	12	196 52.7	27 15.8	N 5 55.6	344 36.1	S 12 59.2	256 59.0	S 21 17.0	261 39.3	S 21 40.4	Gacrux	172 45.1	S 56 53.8		
	13	211 55.1	42 15.4	54.5	359 36.9	12 59.8	272 01.3	17.0	276 41.7	40.4	Gienah	176 32.9	S 17 19.6		
	14	226 57.6	57 15.0	53.3	14 37.7	13 00.4	287 03.6	17.0	291 44.1	40.4	Hadar	149 44.1	S 60 11.2		
	15	242 00.1	72 14.6	.. 52.2	29 38.6	.. 01.0	302 06.0	.. 16.9	306 46.5	.. 40.4	Hamal	328 44.6	N 23 16.9		
	16	257 02.5	87 14.2	51.0	44 39.4	01.6	317 08.3	16.9	321 48.9	40.4	Kaus Aust.	84 35.8	S 34 24.2		
	17	272 05.0	102 13.8	49.9	59 40.2	02.2	332 10.6	16.9	336 51.3	40.3					
	18	287 07.5	117 13.4	N 5 48.7	74 41.0	S 13 02.8	347 13.0	S 21 16.9	351 53.7	S 21 40.3	Kochab	137 19.4	N 74 19.0		
	19	302 09.9	132 13.0	47.6	89 41.9	03.4	2 15.3	16.8	6 56.2	40.3	Markab	14 17.0	N 15 00.1		
	20	317 12.4	147 12.6	46.4	104 42.7	04.0	17 17.7	16.8	21 58.6	40.3	Menkar	314 55.7	N 3 56.4		
	21	332 14.9	162 12.2	.. 45.3	119 43.5	.. 04.6	32 20.0	.. 16.8	37 01.0	.. 40.3	Menkent	148 54.1	S 36 10.8		
	22	347 17.3	177 11.8	44.1	134 44.3	05.2	47 22.3	16.8	52 03.4	40.3	Miaplacidus	221 48.4	S 69 33.3		
	23	2 19.8	192 11.4	43.0	149 45.1	05.8	62 24.7	16.7	67 05.8	40.3					
MONDAY	9 00	17 22.2	207 11.0	N 5 41.8	164 46.0	S 13 06.4	77 27.0	S 21 16.7	82 08.2	S 21 40.3	Mirfak	309 36.0	N 49 43.4		
	01	32 24.7	222 10.6	40.7	179 46.8	07.0	92 29.3	16.7	97 10.6	40.3	Nunki	76 46.8	S 26 20.7		
	02	47 27.2	237 10.2	39.5	194 47.6	07.6	107 31.7	16.7	112 13.1	40.3	Peacock	54 20.7	S 56 51.7		
	03	62 29.6	252 09.8	.. 38.4	209 48.4	.. 08.2	122 34.0	.. 16.6	127 15.5	.. 40.3	Pollux	244 15.6	N 28 07.1		
	04	77 32.1	267 09.4	37.2	224 49.2	08.8	137 36.3	16.6	142 17.9	40.3	Procyon	245 40.7	N 5 19.5		
	05	92 34.6	282 09.0	36.1	239 50.1	09.4	152 38.7	16.6	157 20.3	40.3					
	06	107 37.0	297 08.6	N 5 34.9	254 50.9	S 13 10.0	167 41.0	S 21 16.6	172 22.7	S 21 40.3	Rasalhague	96 42.9	N 12 35.5		
	07	122 39.5	312 08.2	33.8	269 51.7	10.5	182 43.3	16.5	187 25.1	40.3	Regulus	208 25.4	N 12 09.4		
	08	137 42.0	327 07.8	32.6	284 52.5	11.1	197 45.7	16.5	202 27.5	40.3	Rigel	281 49.5	S 8 14.6		
	09	152 44.4	342 07.4	.. 31.5	299 53.3	.. 11.7	212 48.0	.. 16.5	217 30.0	.. 40.3	Rigel Kent.	140 45.8	S 60 40.6		
	10	167 46.9	357 07.0	30.3	314 54.2	12.3	227 50.3	16.4	232 32.4	40.3	Sabik	102 57.6	S 15 40.6		
	11	182 49.3	12 06.6	29.2	329 55.0	12.9	242 52.7	16.4	247 34.8	40.2					
	12	197 51.8	27 06.2	N 5 28.0	344 55.8	S 13 13.5	257 55.0	S 21 16.4	262 37.2	S 21 40.2	Schedar	350 24.6	N 56 19.7		
	13	212 54.3	42 05.8	26.9	359 56.6	14.1	272 57.3	16.4	277 39.6	40.2	Shaula	97 15.2	S 37 04.6		
	14	227 56.7	57 05.4	25.7	14 57.4	14.7	287 59.6	16.3	292 42.0	40.2	Sirius	259 08.2	S 16 39.6		
	15	242 59.2	72 05.0	.. 24.5	29 58.3	.. 15.3	303 02.0	.. 16.3	307 44.4	.. 40.2	Spica	159 12.8	S 10 57.5		
	16	258 01.7	87 04.6	23.4	44 59.1	15.9	318 04.3	16.3	322 46.8	40.2	Suhail	223 21.4	S 43 16.4		
	17	273 04.1	102 04.2	22.2	59 59.9	16.5	333 06.6	16.3	337 49.3	40.2					
	18	288 06.6	117 03.8	N 5 21.1	75 00.7	S 13 17.1	348 09.0	S 21 16.2	352 51.7	S 21 40.2	Vega	81 05.5	N 38 45.2		
	19	303 09.1	132 03.4	19.9	90 01.5	17.7	3 11.3	16.2	7 54.1	40.2	Zuben'ubi	137 49.1	S 15 52.8		
	20	318 11.5	147 03.0	18.8	105 02.3	18.3	18 13.6	16.2	22 56.5	40.2					
	21	333 14.0	162 02.6	.. 17.6	120 03.2	.. 18.9	33 15.9	.. 16.2	37 58.9	.. 40.2					
	22	348 16.5	177 02.2	16.5	135 04.0	19.5	48 18.3	16.1	53 01.3	40.2					
	23	3 18.9	192 01.8	15.3	150 04.8	20.1	63 20.6	16.1	68 03.7	40.2					
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	ARIES			VENUS -3.4			MARS +1.8			JUPITER -2.0			SATURN +0.7			STARS		
G.M.T.	G.H.A.			G.H.A. Dec.			G.H.A. Dec.			G.H.A. Dec.			G.H.A. Dec.			Name	S.H.A.	Dec.
^d ^h																		
TUESDAY	10 00	18 21.4	207 01.4 N 5 14.1	165 05.6	S 13 20.7	78 22.9	S 21 16.1	83 06.1	S 21 40.2	Acamar	315 47.6	S 40 27.4						
	01	33 23.8	222 01.0	13.0	180 06.4	21.2	93 25.2	16.1	98 08.5	40.2	Achernar	335 55.3	S 57 25.9					
	02	48 26.3	237 00.6	11.8	195 07.2	21.8	108 27.6	16.0	113 11.0	40.2	Acrux	173 53.7	S 62 53.0					
	03	63 28.8	252 00.2	10.7	210 08.1	22.4	123 29.9	16.0	128 13.4	40.2	Adhara	255 43.2	S 28 55.0					
	04	78 31.2	266 59.8	09.5	225 08.9	23.0	138 32.2	16.0	143 15.8	40.1	Aldebaran	291 34.1	N 16 25.9					
	05	93 33.7	281 59.4	08.3	240 09.7	23.6	153 34.5	15.9	158 18.2	40.1								
	06	108 36.2	296 59.0 N 5 07.2	255 10.5	S 13 24.2	168 36.9	S 21 15.9	173 20.6	S 21 40.1	Alioth	166 55.6	N 56 10.2						
	07	123 38.6	311 58.7	06.0	270 11.3	24.8	183 39.2	15.9	188 23.0	40.1	Alkaid	153 30.2	N 49 30.4					
	08	138 41.1	326 58.3	04.9	285 12.1	25.4	198 41.5	15.9	203 25.4	40.1	Al Na'ir	28 32.5	S 47 08.9					
	09	153 43.6	341 57.9	03.7	300 12.9	26.0	213 43.8	15.8	218 27.8	40.1	Alnilam	276 25.9	S 1 13.5					
	10	168 46.0	356 57.5	02.5	315 13.8	26.6	228 46.2	15.8	233 30.2	40.1	Alphard	218 34.7	S 8 29.4					
	11	183 48.5	11 57.1	01.4	330 14.6	27.2	243 48.5	15.8	248 32.6	40.1								
	12	198 50.9	26 56.7 N 5 00.2	345 15.4	S 13 27.8	258 50.8	S 21 15.8	263 35.0	S 21 40.1	Alphecca	126 44.5	N 26 50.9						
	13	213 53.4	41 56.3	4 59.1	0 16.2	28.3	273 53.1	15.7	278 37.4	40.1	Alpheratz	358 23.7	N 28 52.9					
	14	228 55.9	56 55.9	57.9	15 17.0	28.9	288 55.4	15.7	293 39.9	40.1	Altair	62 46.3	N 8 46.2					
	15	243 58.3	71 55.5	56.7	30 17.8	29.5	303 57.8	15.7	308 42.3	40.1	Ankaa	353 53.9	S 42 30.8					
	16	259 00.8	86 55.1	55.6	45 18.6	30.1	319 00.1	15.6	323 44.7	40.1	Antares	113 14.5	S 26 20.8					
	17	274 03.3	101 54.7	54.4	60 19.4	30.7	334 02.4	15.6	338 47.1	40.1								
	18	289 05.7	116 54.3 N 4 53.2	75 20.3	S 13 31.3	349 04.7	S 21 15.6	353 49.5	S 21 40.1	Arcturus	146 31.8	N 19 23.1						
	19	304 08.2	131 53.9	52.1	90 21.1	31.9	4 07.0	15.6	8 51.9	40.0	Atria	108 51.8	S 68 57.7					
	20	319 10.7	146 53.5	50.9	105 21.9	32.5	19 09.4	15.5	23 54.3	40.0	Avior	234 34.2	S 59 22.9					
	21	334 13.1	161 53.1	49.8	120 22.7	33.1	34 11.7	15.5	38 56.7	40.0	Bellatrix	279 13.8	N 6 19.0					
	22	349 15.6	176 52.7	48.6	135 23.5	33.7	49 14.0	15.5	53 59.1	40.0	Betelgeuse	271 43.5	N 7 24.0					
	23	4 18.1	191 52.3	47.4	150 24.3	34.3	64 16.3	15.4	69 01.5	40.0								
WEDNESDAY	11 00	19 20.5	206 51.9 N 4 46.3	165 25.1	S 13 34.8	79 18.6	S 21 15.4	84 03.9	S 21 40.0	Canopus	264 13.4	S 52 40.2						
	01	34 23.0	221 51.5	45.1	180 25.9	35.4	94 21.0	15.4	99 06.3	40.0	Capella	281 32.0	N 45 57.4					
	02	49 25.4	236 51.1	43.9	195 26.7	36.0	109 23.3	15.4	114 08.7	40.0	Deneb	49 58.0	N 45 08.9					
	03	64 27.9	251 50.8	42.8	210 27.5	36.6	124 25.6	15.3	129 11.1	40.0	Denebola	183 13.8	N 14 47.3					
	04	79 30.4	266 50.4	41.6	225 28.4	37.2	139 27.9	15.3	144 13.5	40.0	Diphda	349 34.8	S 18 11.7					
	05	94 32.8	281 50.0	40.4	240 29.2	37.8	154 30.2	15.3	159 15.9	40.0								
	06	109 35.3	296 49.6 N 4 39.3	255 30.0	S 13 38.4	169 32.5	S 21 15.2	174 18.3	S 21 40.0	Dubhe	194 40.2	N 61 57.4						
	07	124 37.8	311 49.2	38.1	270 30.8	39.0	184 34.9	15.2	189 20.8	40.0	Elnath	279 01.9	N 28 34.5					
	08	139 40.2	326 48.8	36.9	285 31.6	39.6	199 37.2	15.2	204 23.2	40.0	Eltanin	91 04.5	N 51 30.0					
	09	154 42.7	341 48.4	35.8	300 32.4	40.1	214 39.5	15.2	219 25.6	39.9	Enif	34 25.3	N 9 42.1					
	10	169 45.2	356 48.0	34.6	315 33.2	40.7	229 41.8	15.1	234 28.0	39.9	Fomalhaut	16 06.8	S 29 49.5					
	11	184 47.6	11 47.6	33.4	330 34.0	41.3	244 44.1	15.1	249 30.4	39.9								
	12	199 50.1	26 47.2 N 4 32.3	345 34.8	S 13 41.9	259 46.4	S 21 15.1	264 32.8	S 21 39.9	Gacrux	172 45.1	S 56 53.7						
	13	214 52.5	41 46.8	31.1	0 35.6	42.5	274 48.7	15.0	279 35.2	39.9	Gienah	176 32.9	S 17 19.6					
	14	229 55.0	56 46.4	29.9	15 36.4	43.1	289 51.0	15.0	294 37.6	39.9	Hadar	149 44.1	S 60 11.2					
	15	244 57.5	71 46.0	28.8	30 37.2	43.7	304 53.4	15.0	309 40.0	39.9	Hamal	328 44.6	N 23 16.9					
	16	259 59.9	86 45.6	27.6	45 38.0	44.3	319 55.7	14.9	324 42.4	39.9	Kaus Aust.	84 35.8	S 34 24.2					
	17	275 02.4	101 45.2	26.4	60 38.8	44.8	334 58.0	14.9	339 44.8	39.9								
	18	290 04.9	116 44.8 N 4 25.2	75 39.7	S 13 45.4	350 00.3	S 21 14.9	354 47.2	S 21 39.9	Kochab	137 19.4	N 74 19.0						
	19	305 07.3	131 44.5	24.1	90 40.5	46.0	5 02.6	14.9	9 49.6	39.9	Markab	14 17.0	N 15 00.1					
	20	320 09.8	146 44.1	22.9	105 41.3	46.6	20 04.9	14.8	24 52.0	39.9	Menkar	314 55.7	N 3 56.4					
	21	335 12.3	161 43.7	21.7	120 42.1	47.2	35 07.2	14.8	39 54.4	39.8	Menkent	148 54.1	S 36 10.8					
	22	350 14.7	176 43.3	20.6	135 42.9	47.8	50 09.5	14.8	54 56.8	39.8	Miaplacidus	221 48.4	S 69 33.3					
	23	5 17.2	191 42.9	19.4	150 43.7	48.4	65 11.9	14.7	69 59.2	39.8								
THURSDAY	12 00	20 19.7	206 42.5 N 4 18.2	165 44.5	S 13 48.9	80 14.2	S 21 14.7	85 01.6	S 21 39.8	Mirfak	309 36.0	N 49 43.4						
	01	35 22.1	221 42.1	17.0	180 45.3	49.5	95 16.5	14.7	100 04.0	39.8	Nunki	76 46.8	S 26 20.7					
	02	50 24.6	236 41.7	15.9	195 46.1	50.1	110 18.8	14.7	115 06.4	39.8	Peacock	54 20.7	S 56 51.7					
	03	65 27.0	251 41.3	14.7	210 46.9	50.7	125 21.1	14.6	130 08.8	39.8	Pollux	244 15.6	N 28 07.1					
	04	80 29.5	266 40.9	13.5	225 47.7	51.3	140 23.4	14.6	145 11.2	39.8	Procyon	245 40.7	N 5 19.5					
	05	95 32.0	281 40.5	12.4	240 48.5	51.9	155 25.7	14.6	160 13.6	39.8								
	06	110 34.4	296 40.1 N 4 11.2	255 49.3	S 13 52.5	170 28.0	S 21 14.5	175 16.0	S 21 39.8	Rasalhague	96 42.9	N 12 35.5						
	07	125 36.9	311 39.7	10.0	270 50.1	53.0	185 30.3	14.5	190 18.4	39.8	Regulus	208 25.4	N 12 09.4					
	08	140 39.4	326 39.4	08.8	285 50.9	53.6	200 32.6	14.5	205 20.8	39.8	Rigel	281 49.5	S 8 14.6					
	09	155 41.8	341 39.0	07.7	300 51.7	54.2	215 34.9	14.4	220 23.2	39.8	Rigel Kent.	140 45.8	S 60 40.6					
	10	170 44.3	356 38.6	06.5	315 52.5	54.8	230 37.2	14.4	235 25.6	39.7	Sabik	102 57.6	S 15 40.6					
	11	185 46.8	11 38.2	05.3	330 53.3	55.4	245 39.5	14.4	250 28.0	39.7								
	12	200 49.2	26 37.8 N 4 04.1	345 54.1	S 13 56.0	260 41.9	S 21 14.3	265 30.4	S 21 39.7	Schedar	350 24.6	N 56 19.7						
	13	215 51.7	41 37.4	03.0	0 54.9	56.5	275 44.2	14.3	280 32.8	39.7	Shaula	97 15.2	S 37 04.6					
	14	230 54.1	56 37.0	01.8	15 55.7	57.1	290 46.5	14.3	295 35.2	39.7	Sirius	259 08.2	S 16 39.6					
	15	245 56.6	71 36.6	00.6	30 56.5	57.7	305 48.8	14.2	310 37.6	39.7	Spica	159 12.8	S 10 57.5					
	16	260 59.1	86 36.2	58.3	45 57.3	58.3	320 51.1	14.2	325 40.0	39.7	Suhail	223 21.4	S 43 16.4					
	17	276 01.5	101 35.8	58.3	60 58.1	58.9	335 53.4	14.2	340 42.4	39.7								
	18	291 04.0	116 35.5 N 3 57.1	75 58.9	S 13 59.5	350 55.7	S 21 14.2	355 44.8	S 21 39.7	Vega	81 05.5	N 38 45.2						
	19	306 06.5	131 35.1	55.9	90 59.7	14 00.0	5 58.0	14.1	10 47.2	39.7	Zuben'ubi	137 49.1	S 15 52.8					
	20	321 08.9	146 34.7	54.7	106 00.5	00.6	21 00.3	14.1	25 49.6	39.7								
	21	336 11.4	161 34.3	53.6	121 01.3	01.2	36 02.6	14.1	40 52.0	39.7								
	22	351 13.9	176 33.9	52.4	136 02.1	01.8	51 04.9	14.0	55 54.4	39.6								
	23	6 16.3	191 33.5	51.2	151 02.9	02.4	66 07.2	14.0	70 56.8	39.6								
Mer. Pass. 22 38.9															^h ^m	^h ^m	Mer. Pass.	
															^h ^m	^h ^m	^h ^m	
															^h ^m	^h ^m	^h ^m	
															^h ^m	^h ^m	^h ^m	
															^h ^m	^h ^m	^h ^m	
															^h ^m	^h ^m	^h ^m	
															^h ^m	^h ^m	^h ^m	
															^h ^m	^h ^m	^h ^m	
															^{h</}			

G.M.T.		SUN		MOON					Lat.	Twilight		Sun-rise	Moonrise								
		G.H.A.	Dec.	G.H.A.	<i>v</i>	Dec.	<i>d</i>	H.P.		Naut.	Civil		10	11	12	13					
d	h																				
		°	'	°	'	°	'	'	°	'	°	'	°	'	°	'					
TUESDAY	00	183	12.2	S 6	28.0	179	23.0	14.1	S	3	37.6	10.2	55.2	N 72	04 36	05 55	07 04	07 17	09 02	10 53	12 57
	01	198	12.4		29.0	193	56.1	14.0		3	47.8	10.1	55.3	N 70	04 42	05 53	06 55	07 10	08 47	10 28	12 13
	02	213	12.5		29.9	208	29.1	14.0		3	57.9	10.1	55.3	68	04 47	05 52	06 48	07 04	08 35	10 09	11 44
	03	228	12.7	..	30.9	223	02.1	14.0		4	08.0	10.1	55.3	64	04 54	05 49	06 37	06 56	08 18	09 41	11 05
	04	243	12.9		31.8	237	35.1	13.9		4	18.1	10.1	55.3	62	04 57	05 48	06 33	06 52	08 11	09 31	10 51
	05	258	13.0		32.8	252	08.0	14.0		4	28.2	10.0	55.3	60	04 59	05 47	06 29	06 49	08 05	09 22	10 39
	06	273	13.2	S 6	33.7	266	41.0	13.8	S	4	38.2	10.1	55.3	N 58	05 01	05 46	06 25	06 46	08 00	09 14	10 28
	07	288	13.4		34.7	281	13.8	13.9		4	48.3	10.0	55.4	56	05 02	05 45	06 22	06 44	07 55	09 07	10 19
	08	303	13.5		35.6	295	46.7	13.8		4	58.3	10.1	55.4	54	05 03	05 44	06 20	06 41	07 51	09 01	10 12
	09	318	13.7	..	36.6	310	19.5	13.8		5	08.4	10.0	55.4	52	05 04	05 43	06 17	06 39	07 47	08 56	10 04
	10	333	13.8		37.5	324	52.3	13.7		5	18.4	10.0	55.4	50	05 05	05 43	06 15	06 38	07 44	08 51	09 58
	11	348	14.0		38.5	339	25.0	13.8		5	28.4	9.9	55.4	45	05 07	05 41	06 10	06 34	07 37	08 40	09 44
	12	3 14.2	S 6	39.4	353	57.8	13.6	S	5	38.3	10.0	55.5	N 40	05 07	05 39	06 06	06 31	07 30	08 32	09 33	
	13	18 14.3		40.4	8 30.4	13.7			5	48.3	9.9	55.5	35	05 08	05 37	06 02	06 28	07 25	08 24	09 24	
	14	33 14.5		41.3	23 03.1	13.6			5	58.2	10.0	55.5	30	05 07	05 35	05 59	06 26	07 21	08 18	09 16	
	15	48 14.7	..	42.3	37 35.7	13.5			6	08.2	9.8	55.5	20	05 06	05 31	05 53	06 21	07 13	08 06	09 01	
	16	63 14.8		43.2	52 08.2	13.6			6	18.0	9.9	55.5	N 10	05 03	05 27	05 48	06 18	07 06	07 56	08 49	
	17	78 15.0		44.1	66 40.8	13.5			6	27.9	9.9	55.5	0	04 59	05 23	05 43	06 14	07 00	07 47	08 37	
	18	93 15.2	S 6	45.1	81 13.3	13.4	S	6	37.8	9.8	55.6	S 10	04 53	05 17	05 39	06 11	06 53	07 38	08 25		
	19	108 15.3		46.0	95 45.7	13.4			6	47.6	9.8	55.6	20	04 45	05 11	05 33	06 07	06 46	07 28	08 13	
	20	123 15.5		47.0	110 18.1	13.4			6	57.4	9.8	55.6	30	04 34	05 03	05 27	06 03	06 39	07 17	07 59	
	21	138 15.6	..	47.9	124 50.5	13.3			7	07.2	9.7	55.6	35	04 27	04 58	05 23	06 01	06 34	07 11	07 51	
	22	153 15.8		48.9	139 22.8	13.3			7	16.9	9.8	55.6	40	04 19	04 51	05 19	05 58	06 29	07 04	07 41	
	23	168 16.0		49.8	153 55.1	13.3			7	26.7	9.7	55.7	45	04 08	04 44	05 14	05 55	06 24	06 55	07 31	
	WEDNESDAY	00	183	16.1	S 6	50.8	168	27.4	13.2	S	7	36.4	9.6	55.7	S 50	03 55	04 35	05 08	05 52	06 17	06 45
01		198	16.3		51.7	182	59.6	13.2		7	46.0	9.7	55.7	52	03 48	04 31	05 06	05 50	06 14	06 40	07 12
02		213	16.5		52.7	197	31.8	13.1		7	55.7	9.6	55.7	54	03 41	04 26	05 03	05 48	06 10	06 35	07 05
03		228	16.6	..	53.6	212	03.9	13.1		8	05.3	9.6	55.7	56	03 32	04 20	04 59	05 46	06 07	06 30	06 58
04		243	16.8		54.5	226	36.0	13.0		8	14.9	9.5	55.8	58	03 23	04 14	04 55	05 44	06 02	06 23	06 49
05		258	16.9		55.5	241	08.0	13.0		8	24.4	9.5	55.8	S 60	03 11	04 07	04 51	05 42	05 58	06 16	06 40
06		273	17.1	S 6	56.4	255	40.0	12.9	S	8	33.9	9.5	55.8								
07		288	17.3		57.4	270	11.9	12.9		8	43.4	9.5	55.8	Lat.	Sun-set	Twilight		Moonset			
08		303	17.4		58.3	284	43.8	12.9		8	52.9	9.4	55.8			Civil	Naut.	10	11	12	13
09		318	17.6	6	59.3	299	15.7	12.8		9	02.3	9.4	55.8	<i>o</i>	<i>h m</i>	<i>h m</i>	<i>h m</i>	<i>h m</i>	<i>h m</i>	<i>h m</i>	<i>h m</i>
10		333	17.7	7	00.2	313	47.5	12.8		9	11.7	9.3	55.9	N 72	16 28	17 37	18 55	17 10	17 01	16 49	16 29
11		348	17.9		01.2	328	19.3	12.7		9	21.0	9.3	55.9	N 70	16 37	17 38	18 49	17 19	17 17	17 15	17 14
12		3 18.1	S 7	02.1	342	51.0	12.7	S	9	30.3	9.3	55.9	68	16 44	17 40	18 44	17 27	17 30	17 35	17 44	
13		18 18.2		03.0	357	22.7	12.6		9	39.6	9.2	55.9	66	16 50	17 42	18 41	17 33	17 41	17 51	18 07	
14		33 18.4		04.0	11 54.3	12.6			9	48.8	9.2	55.9	64	16 55	17 43	18 38	17 39	17 50	18 05	18 24	
15		48 18.5	..	04.9	26 25.9	12.5			9	58.0	9.1	56.0	62	17 00	17 44	18 35	17 43	17 58	18 16	18 39	
16		63 18.7		05.9	40 57.4	12.5			10	07.1	9.1	56.0	60	17 04	17 45	18 33	17 48	18 05	18 25	18 52	
17		78 18.9		06.8	55 28.9	12.4			10	16.2	9.1	56.0	N 58	17 07	17 46	18 32	17 51	18 11	18 34	19 02	
18		93 19.0	S 7	07.8	70 00.3	12.4	S	10	25.3	9.0	56.0	56	17 10	17 47	18 30	17 55	18 16	18 41	19 12		
19		108 19.2		08.7	84 31.7	12.3			10	34.3	9.0	56.0	54	17 13	17 48	18 29	17 58	18 21	18 48	19 20	
20		123 19.3		09.6	99 03.0	12.3			10	43.3	8.9	56.1	52	17 15	17 49	18 28	18 00	18 25	18 54	19 27	
21		138 19.5	..	10.6	113 34.3	12.2			10	52.2	8.9	56.1	50	17 18	17 50	18 27	18 03	18 29	18 59	19 34	
22		153 19.6		11.5	128 05.5	12.2			11	01.1	8.8	56.1	45	17 23	17 52	18 26	18 08	18 38	19 11	19 49	
23		168 19.8		12.5	142 36.7	12.1			11	09.9	8.8	56.1	N 40	17 27	17 54	18 25	18 12	18 45	19 21	20 01	
THURSDAY		00	183	20.0	S 7	13.4	157	07.8	12.0	S	11	18.7	8.7	56.1	35	17 31	17 56	18 25	18 16	18 51	19 29
	01	198	20.1		14.3	171	38.8	12.1		11	27.4	8.7	56.2	30	17 34	17 58	18 26	18 20	18 56	19 36	20 20
	02	213	20.3		15.3	186	09.9	11.9		11	36.1	8.6	56.2	20	17 40	18 02	18 28	18 26	19 06	19 49	20 35
	03	228	20.4	..	16.2	200	40.8	11.9		11	44.7	8.6	56.2	N 10	17 45	18 06	18 31	18 31	19 14	20 00	20 49
	04	243	20.6		17.2	215	11.7	11.9		11	53.3	8.5	56.2	0	17 50	18 11	18 35	18 36	19 22	20 11	21 01
	05	258	20.7		18.1	229	42.6	11.8		12	01.8	8.5	56.2	S 10	17 55	18 16	18 41	18 41	19 30	20 21	21 14
	06	273	20.9	S 7	19.1	244	13.4	11.7	S	12	10.3	8.4	56.3	20	18 01	18 23	18 49	18 46	19 38	20 33	21 28
	07	288	21.1		20.0	258	44.1	11.7		12	18.7	8.4	56.3	30	18 07	18 32	19 00	18 52	19 48	20 45	21 44
	08	303	21.2		20.9	273	14.8	11.7		12	27.1	8.3	56.3	35	18 11	18 37	19 07	18 55	19 53	20 53	21 52
	09	318	21.4	..	21.9	287	45.5	11.6		12	35.4	8.3	56.3	40	18 15	18 43	19 16	18 59	20 00	21 01	22 03
	10	333	21.5		22.8	302	16.1	11.5		12	43.7	8.2	56.3	45	18 20	18 50	19 27	19 04	20 07	21 11	22 15
	11	348	21.7		23.7	316	46.6	11.5		12	51.9	8.1	56.4	S 50	18 26	19 00	19 40	19 09	20 16	21 23	22 29
	12	3 21.8	S 7	24.7	331	17.1	11.4	S	13	00.0	8.1	56.4	52	18 29	19 04	19 47	19 12	20 20	21 29	22 36	
	13	18 22.0		25.6	345	47.5	11.4		13	08.1	8.0	56.4	54	18 32	19 09	19					

	ARIES			VENUS -3.4			MARS +1.8			JUPITER -2.0			SATURN +0.7			STARS		
G.M.T.	G.H.A.			G.H.A.			G.H.A.			G.H.A.			G.H.A.			Name	S.H.A.	Dec.
d h	m	s		m	s		m	s		m	s		m	s		m	s	
13 00	21	18.8	206 33.1 N 3 50.0	166 03.7 S 14 03.0	81 09.5 S 21 14.0	85 59.2 S 21 39.6	Acamar	315 47.6	S 40 27.4									
	01	36 21.3	221 32.7 48.8	181 04.5 03.5	96 11.8 13.9	101 01.6 39.6	Achernar	335 55.3	S 57 25.9									
	02	51 23.7	236 32.3 47.7	196 05.3 04.1	111 14.1 13.9	116 04.0 39.6	Acruz	173 53.7	S 62 53.0									
	03	66 26.2	251 31.9 .. 46.5	211 06.1 .. 04.7	126 16.4 .. 13.9	131 06.4 .. 39.6	Adhara	255 43.2	S 28 55.0									
	04	81 28.6	266 31.6 45.3	226 06.9 05.3	141 18.7 13.8	146 08.8 39.6	Aldebaran	291 34.1	N 16 25.9									
05	96 31.1	281 31.2 44.1	241 07.7 05.9	156 21.0 13.8	161 11.2 39.6													
06	111 33.6	296 30.8 N 3 42.9	256 08.5 S 14 06.4	171 23.3 S 21 13.8	176 13.6 S 21 39.6	Alioth	166 55.6	N 56 10.1										
07	126 36.0	311 30.4 41.8	271 09.3 07.0	186 25.6 13.7	191 16.0 39.6	Alkaid	153 30.2	N 49 30.4										
08	141 38.5	326 30.0 40.6	286 10.1 07.6	201 27.9 13.7	206 18.4 39.6	Al Na'ir	28 32.5	S 47 08.9										
F R I	09	156 41.0	341 29.6 .. 39.4	301 10.9 .. 08.2	216 30.2 .. 13.7	221 20.8 .. 39.6	Anilam	276 25.9	S 1 13.5									
	10	171 43.4	356 29.2 38.2	316 11.7 08.8	231 32.5 13.6	236 23.1 39.5	Alphard	218 34.7	S 8 29.4									
	11	186 45.9	11 28.8 37.1	331 12.5 09.3	246 34.8 13.6	251 25.5 39.5												
	12	201 48.4	26 28.4 N 3 35.9	346 13.3 S 14 09.9	261 37.1 S 21 13.6	266 27.9 S 21 39.5	Alphecca	126 44.5	N 26 50.9									
	13	216 50.8	41 28.0 34.7	1 14.1 10.5	276 39.4 13.5	281 30.3 39.5	Alpheratz	358 23.7	N 28 52.9									
D A Y	14	231 53.3	56 27.7 33.5	16 14.9 11.1	291 41.7 13.5	296 32.7 39.5	Altair	62 46.4	N 8 46.2									
	15	246 55.8	71 27.3 .. 32.3	31 15.7 .. 11.7	306 44.0 .. 13.5	311 35.1 .. 39.5	Ankaa	353 53.9	S 42 30.8									
	16	261 58.2	86 26.9 31.1	46 16.5 12.2	321 46.3 13.4	326 37.5 39.5	Antares	113 14.5	S 26 20.8									
	17	277 00.7	101 26.5 30.0	61 17.3 12.8	336 48.6 13.4	341 39.9 39.5												
	18	292 03.1	116 26.1 N 3 28.8	76 18.1 S 14 13.4	351 50.9 S 21 13.4	356 42.3 S 21 39.5	Arcturus	146 31.8	N 19 23.1									
19	307 05.6	131 25.7 27.6	91 18.9 14.0	6 53.2 13.3	11 44.7 39.5	Atria	108 51.8	S 68 57.6										
20	322 08.1	146 25.3 26.4	106 19.7 14.6	21 55.5 13.3	26 47.1 39.5	Avior	234 34.1	S 59 22.9										
21	337 10.5	161 24.9 .. 25.2	121 20.4 .. 15.1	36 57.8 .. 13.3	41 49.5 .. 39.4	Bellatrix	279 13.8	N 6 19.0										
22	352 13.0	176 24.5 24.1	136 21.2 15.7	52 00.1 13.2	56 51.9 39.4	Betelgeuse	271 43.5	N 7 24.0										
23	7 15.5	191 24.2 22.9	151 22.0 16.3	67 02.3 13.2	71 54.3 39.4													
14 00	22	17.9	206 23.8 N 3 21.7	166 22.8 S 14 16.9	82 04.6 S 21 13.2	86 56.7 S 21 39.4	Canopus	264 13.4	S 52 40.2									
	01	37 20.4	221 23.4 20.5	181 23.6 17.5	97 06.9 13.1	101 59.1 39.4	Capella	281 32.0	N 45 57.4									
	02	52 22.9	236 23.0 19.3	196 24.4 18.0	112 09.2 13.1	117 01.4 39.4	Deneb	49 58.0	N 45 08.9									
	03	67 25.3	251 22.6 .. 18.1	211 25.2 .. 18.6	127 11.5 .. 13.1	132 03.8 .. 39.4	Denebola	183 13.8	N 14 47.3									
	04	82 27.8	266 22.2 17.0	226 26.0 19.2	142 13.8 13.0	147 06.2 39.4	Diphda	349 34.8	S 18 11.8									
05	97 30.2	281 21.8 15.8	241 26.8 19.8	157 16.1 13.0	162 08.6 39.4													
S A T	06	112 32.7	296 21.4 N 3 14.6	256 27.6 S 14 20.3	172 18.4 S 21 13.0	177 11.0 S 21 39.4	Dubhe	194 40.2	N 61 57.4									
	07	127 35.2	311 21.1 13.4	271 28.4 20.9	187 20.7 12.9	192 13.4 39.4	Elnath	279 01.9	N 28 34.5									
	08	142 37.6	326 20.7 12.2	286 29.2 21.5	202 23.0 12.9	207 15.8 39.3	Eltanin	91 04.5	N 51 30.0									
	09	157 40.1	341 20.3 .. 11.0	301 30.0 .. 22.1	217 25.3 .. 12.9	222 18.2 .. 39.3	Enif	34 25.3	N 9 42.1									
	10	172 42.6	356 19.9 09.8	316 30.7 22.7	232 27.6 12.8	237 20.6 39.3	Fomalhaut	16 06.8	S 29 49.5									
11	187 45.0	11 19.5 08.7	331 31.5 23.2	247 29.8 12.8	252 23.0 39.3													
U R D A Y	12	202 47.5	26 19.1 N 3 07.5	346 32.3 S 14 23.8	262 32.1 S 21 12.8	267 25.4 S 21 39.3	Gacrux	172 45.1	S 56 53.7									
	13	217 50.0	41 18.7 06.3	1 33.1 24.4	277 34.4 12.7	282 27.7 39.3	Gienah	176 32.9	S 17 19.6									
	14	232 52.4	56 18.3 05.1	16 33.9 25.0	292 36.7 12.7	297 30.1 39.3	Hadar	149 44.1	S 60 11.2									
	15	247 54.9	71 18.0 .. 03.9	31 34.7 .. 25.5	307 39.0 .. 12.7	312 32.5 .. 39.3	Hamal	328 44.6	N 23 16.9									
	16	262 57.4	86 17.6 02.7	46 35.5 26.1	322 41.3 12.6	327 34.9 39.3	Kaus Aust.	84 35.8	S 34 24.2									
17	277 59.8	101 17.2 01.5	61 36.3 26.7	337 43.6 12.6	342 37.3 39.3													
18	293 02.3	116 16.8 N 3 00.4	76 37.1 S 14 27.3	352 45.9 S 21 12.6	357 39.7 S 21 39.3	Kochab	137 19.5	N 74 19.0										
19	308 04.7	131 16.4 2.59.2	91 37.9 27.8	7 48.2 12.5	12 42.1 39.2	Markab	14 17.0	N 15 00.1										
20	323 07.2	146 16.0 58.0	106 38.6 28.4	22 50.4 12.5	27 44.5 39.2	Menkar	314 55.7	N 3 56.4										
21	338 09.7	161 15.6 .. 56.8	121 39.4 .. 29.0	37 52.7 .. 12.5	42 46.9 .. 39.2	Menkent	148 54.1	S 36 10.8										
22	353 12.1	176 15.2 55.6	136 40.2 29.6	52 55.0 12.4	57 49.3 39.2	Miaplacidus	221 48.3	S 69 33.3										
23	8 14.6	191 14.9 54.4	151 41.0 30.1	67 57.3 12.4	72 51.6 39.2													
15 00	23	17.1	206 14.5 N 2 53.2	166 41.8 S 14 30.7	82 59.6 S 21 12.4	87 54.0 S 21 39.2	Mirfak	309 36.0	N 49 43.4									
	01	38 19.5	221 14.1 52.0	181 42.6 31.3	98 01.9 12.3	102 56.4 39.2	Nunki	76 46.8	S 26 20.7									
	02	53 22.0	236 13.7 50.8	196 43.4 31.9	113 04.2 12.3	117 58.8 39.2	Peacock	54 20.7	S 56 51.7									
	03	68 24.5	251 13.3 .. 49.7	211 44.2 .. 32.4	128 06.4 .. 12.3	133 01.2 .. 39.2	Pollux	244 15.6	N 28 07.1									
	04	83 26.9	266 12.9 48.5	226 44.9 33.0	143 08.7 12.2	148 03.6 39.2	Procyon	245 40.7	N 5 19.5									
05	98 29.4	281 12.5 47.3	241 45.7 33.6	158 11.0 12.2	163 06.0 39.1													
S U N D A Y	06	113 31.9	296 12.2 N 2 46.1	256 46.5 S 14 34.1	173 13.3 S 21 12.2	178 08.4 S 21 39.1	Rasalhague	96 42.9	N 12 35.5									
	07	128 34.3	311 11.8 44.9	271 47.3 34.7	188 15.6 12.1	193 10.7 39.1	Regulus	208 25.3	N 12 09.4									
	08	143 36.8	326 11.4 43.7	286 48.1 35.3	203 17.9 12.1	208 13.1 39.1	Rigel	281 49.5	S 8 14.6									
	09	158 39.2	341 11.0 .. 42.5	301 48.9 .. 35.9	218 20.1 .. 12.0	223 15.5 .. 39.1	Rigel Kent.	140 45.8	S 60 40.5									
	10	173 41.7	356 10.6 41.3	316 49.7 36.4	233 22.4 12.0	238 17.9 39.1	Sabik	102 57.6	S 15 40.6									
11	188 44.2	11 10.2 40.1	331 50.4 37.0	248 24.7 12.0	253 20.3 39.1													
12	203 46.6	26 09.8 N 2 39.0	346 51.2 S 14 37.6	263 27.0 S 21 11.9	268 22.7 S 21 39.1	Schedar	350 24.6	N 56 19.7										
13	218 49.1	41 09.4 37.8	1 52.0 38.2	278 29.3 11.9	283 25.1 39.1	Shaula	97 15.3	S 37 04.6										
14	233 51.6	56 09.1 36.6	16 52.8 38.7	293 31.6 11.9	298 27.4 39.0	Sirius	259 08.2	S 16 39.6										
15	248 54.0	71 08.7 .. 35.4	31 53.6 .. 39.3	308 33.8 .. 11.8	313 29.8 .. 39.0	Spica	159 12.8	N 10 57.5										
16	263 56.5	86 08.3 34.2	46 54.4 39.9	323 36.1 11.8	328 32.2 39.0	Suhail	223 21.4	S 43 16.4										
17	278 59.0	101 07.9 33.0	61 55.1 40.4	338 38.4 11.8	343 34.6 39.0													
18	294 01.4	116 07.5 N 2 31.8	76 55.9 S 14 41.0	353 40.7 S 21 11.7	358 37.0 S 21 39.0	Vega	81 05.5	N 38 45.2										
19	309 03.9	131 07.1 30.6	91 56.7 41.6	8 43.0 11.7	13 39.4 39.0	Zuben'ubi	137 49.1	S 15 52.8										
20	324 06.4	146 06.7 29.4	106 57.5 42.2	23 45.2 11.7	28 41.8 39.0													
21	339 08.8	161 06.4 .. 28.2	121 58.3 .. 42.7	38 47.5 .. 11.6	43 44.1 .. 39.0													
22	354 11.3	176 06.0 27.0	136 59.1 43.3	53 49.8 11.6	58 46.5 39.0													
23	9 13.7	191 05.6 25.8	151 59.8 43.9	68 52.1 11.5	73 48.9 38.9													
Mer. Pass. 22 27.1																		
h m																		
v 0.4 d 1.2																		
v 0.8 d 0.6																		
v 2.3 d 0.0																		
v 2.4 d 0.0																		
S.H.A. Mer. Pass.																		
h m																		
Venus 184 05.9 10 15																		
Mars 144 04.9 12 54																		
Jupiter 59 46.7 18 29																		
Saturn 64 38.8 18 09																		

G.M.T.	SUN		MOON				Lat.	Twilight		Sun-rise	Moonrise									
	G.H.A.	Dec.	G.H.A.	v.	Dec.	d		H.P.	Naut.		Civil	13	14	15	16					
d h	°	'	°	'	°	'	°	h m	h m	h m	h m	h m	h m	h m						
F R I D A Y	1300	183	23.7	S 7	36.0	145	18.4	10.7	S 14	32.7	7.3	56.6	N 72	04 50	06 08	07 18	12 57	■	■	■
	01	198	23.8		36.9	159	48.1	10.7		14 40.0	7.2	56.7	N 70	04 54	06 05	07 08	12 13	14 00	15 40	16 31
	02	213	24.0		37.8	174	17.8	10.6		14 47.2	7.1	56.7	68	04 58	06 02	06 59	11 44	13 16	14 36	15 31
	03	228	24.1	..	38.8	188	47.4	10.6		14 54.3	7.1	56.7	66	05 01	06 00	06 52	11 22	12 47	14 01	14 56
	04	243	24.3		39.7	203	17.0	10.5		15 01.4	7.0	56.7	64	05 03	05 58	06 46	11 05	12 24	13 35	14 31
	05	258	24.4		40.6	217	46.5	10.4		15 08.4	6.9	56.7	62	05 05	05 56	06 41	10 51	12 07	13 15	14 11
	06	273	24.6	S 7	41.6	232	15.9	10.4	S 15	15.3	6.9	56.8	N 58	05 07	05 52	06 32	10 28	11 40	12 45	13 42
	07	288	24.7		42.5	246	45.3	10.4		15 22.2	6.7	56.8	56	05 08	05 51	06 29	10 19	11 29	12 33	13 30
	08	303	24.9		43.4	261	14.7	10.2		15 28.9	6.7	56.8	54	05 09	05 50	06 25	10 12	11 20	12 23	13 20
	09	318	25.0	..	44.4	275	43.9	10.2		15 35.6	6.6	56.8	52	05 09	05 48	06 23	10 04	11 11	12 14	13 10
	10	333	25.2		45.3	290	13.1	10.2		15 42.2	6.6	56.8	50	05 10	05 47	06 20	09 58	11 04	12 06	13 02
	11	348	25.3		46.2	304	42.3	10.1		15 48.8	6.4	56.9	45	05 10	05 44	06 14	09 44	10 48	11 48	12 45
	12	3 25.5	S 7	47.2	319	11.4	10.1	S 15	55.2	6.4	56.9	N 40	05 10	05 42	06 09	09 33	10 34	11 34	12 31	
	13	18 25.6		48.1	333	40.5	9.9		16 01.6	6.3	56.9	35	05 10	05 39	06 05	09 24	10 23	11 22	12 18	
	14	33 25.8		49.1	348	09.4	10.0		16 07.9	6.2	56.9	30	05 09	05 37	06 01	09 16	10 14	11 12	12 08	
	15	48 25.9	..	50.0	2 38.4	9.8	16 14.1	6.1	57.0			20	05 07	05 32	05 54	09 01	09 57	10 54	11 50	
	16	63 26.1		50.9	17 07.2	9.9	16 20.2	6.1	57.0	N 10		0	05 03	05 27	05 48	08 49	09 43	10 38	11 34	
	17	78 26.2		51.9	31 36.1	9.7	16 26.3	5.9	57.0	0		0	04 58	05 22	05 43	08 37	09 29	10 23	11 19	
	18	93 26.4	S 7	52.8	46 04.8	9.7	S 16	32.2	5.9	57.0	S 10		04 51	05 16	05 37	08 25	09 15	10 09	11 05	
	19	108 26.5		53.7	60 33.5	9.6	16 38.1	5.8	57.0	20		20	04 42	05 08	05 31	08 13	09 01	09 53	10 49	
	20	123 26.7		54.7	75 02.1	9.6	16 43.9	5.7	57.1	30		30	04 31	04 59	05 23	07 59	08 44	09 35	10 30	
	21	138 26.8	..	55.6	89 30.7	9.6	16 49.6	5.6	57.1	35		35	04 23	04 53	05 19	07 51	08 35	09 25	10 20	
	22	153 27.0		56.5	103 59.3	9.4	16 55.2	5.5	57.1	40		40	04 14	04 47	05 14	07 41	08 24	09 13	10 08	
23	168 27.1		57.5	118 27.7	9.5	17 00.7	5.4	57.1	45		45	04 02	04 38	05 09	07 31	08 11	08 59	09 54		
S A T U R D A Y	1400	183	27.2	S 7	58.4	132	56.2	9.3	S 17	06.1	5.4	57.1	S 50	03 47	04 28	05 02	07 18	07 56	08 42	09 37
	01	198	27.4		7 59.3	147	24.5	9.3		17 11.5	5.2	57.2	52	03 40	04 23	04 59	07 12	07 49	08 34	09 28
	02	213	27.5	8	00.3	161	52.8	9.3		17 16.7	5.2	57.2	54	03 32	04 18	04 55	07 05	07 41	08 25	09 19
	03	228	27.7	..	01.2	176	21.1	9.2		17 21.9	5.0	57.2	56	03 23	04 12	04 51	06 58	07 32	08 15	09 09
	04	243	27.8		02.1	190	49.3	9.1		17 26.9	5.0	57.2	58	03 12	04 05	04 47	06 49	07 22	08 04	08 58
	05	258	28.0		03.1	205	17.4	9.1		17 31.9	4.8	57.3	S 60	03 00	03 58	04 42	06 40	07 10	07 51	08 44
	06	273	28.1	S 8	04.0	219	45.5	9.0	S 17	36.7	4.8	57.3	Lat.	Sun-set	Twilight	Moonset				
	07	288	28.3		04.9	234	13.5	9.0		17 41.5	4.7	57.3			Civil	Naut.	13	14	15	16
	08	303	28.4		05.8	248	41.5	8.9		17 46.2	4.6	57.3		h m	h m	h m	h m	h m	h m	h m
	09	318	28.6	..	06.8	263	09.4	8.9		17 50.8	4.5	57.3	N 72	16 12	17 22	18 40	16 29	■	■	■
	10	333	28.7		07.7	277	37.3	8.8		17 55.3	4.3	57.4	N 70	16 23	17 25	18 36	17 14	17 16	17 32	18 38
	11	348	28.8		08.6	292	05.1	8.8		17 59.6	4.3	57.4	68	16 32	17 28	18 32	17 44	18 01	18 35	19 38
	12	3 29.0	S 8	09.6	306	32.9	8.7	S 18	03.9	4.2	57.4	66	16 39	17 31	18 30	18 07	18 31	19 11	19 11	20 12
	13	18 29.1		10.5	321	00.6	8.7		18 08.1	4.1	57.4	64	16 45	17 33	18 28	18 24	18 54	19 36	20 37	
	14	33 29.3		11.4	335	28.3	8.6		18 12.4	4.0	57.5	62	16 50	17 35	18 26	18 39	19 11	19 56	20 57	
	15	48 29.4	..	12.4	349	55.9	8.5		18 16.2	3.8	57.5	60	16 55	17 37	18 25	18 52	19 26	20 13	21 12	
	16	63 29.6		13.3	4 23.4	8.5	18 20.0	3.8	57.5			N 58	16 59	17 39	18 24	19 02	19 39	20 26	21 26	
	17	78 29.7		14.2	18 50.9	8.5	18 23.8	3.7	57.5	56		56	17 02	17 40	18 23	19 12	19 50	20 38	21 38	
	18	93 29.8	S 8	15.2	33 18.4	8.4	S 18	27.5	3.6	57.5	54		17 06	17 42	18 22	19 20	20 00	20 49	21 48	
	19	108 30.0		16.1	47 45.8	8.4	18 31.1	3.4	57.6	52		52	17 09	17 43	18 22	19 27	20 08	20 58	21 57	
	20	123 30.1		17.0	62 13.2	8.3	18 34.5	3.4	57.6	50		50	17 11	17 44	18 21	19 34	20 16	21 06	22 05	
	21	138 30.3	..	17.9	76 40.5	8.3	18 37.9	3.2	57.6	45		45	17 18	17 47	18 21	19 49	20 33	21 24	22 22	
	22	153 30.4		18.9	91 07.8	8.2	18 41.1	3.2	57.6	N 40		35	17 23	17 50	18 21	20 01	20 46	21 38	22 36	
23	168 30.6		19.8	105 35.0	8.2	18 44.3	3.0	57.6	35		30	17 27	17 52	18 22	20 11	20 58	21 50	22 48		
S U N D A Y	1500	183	30.7	S 8	20.7	120	02.2	8.1	S 18	47.3	2.9	57.7	N 40	17 23	17 50	18 21	20 01	20 46	21 38	22 36
	01	198	30.8		21.7	134	29.3	8.1		18 50.2	2.8	57.7	35	17 27	17 52	18 22	20 11	20 58	21 50	22 48
	02	213	31.0		22.6	148	56.4	8.0		18 53.0	2.7	57.7	30	17 31	17 55	18 23	20 20	21 08	22 01	22 59
	03	228	31.1	..	23.5	163	23.4	8.0		18 55.7	2.6	57.7	20	17 38	18 00	18 25	20 35	21 25	22 19	23 16
	04	243	31.3		24.4	177	50.4	8.0		18 58.3	2.5	57.8	N 10	17 44	18 05	18 29	20 49	21 40	22 35	23 32
	05	258	31.4		25.4	192	17.4	7.9		19 00.8	2.4	57.8	0	17 49	18 10	18 34	21 01	21 55	22 50	23 46
	06	273	31.5	S 8	26.3	206	44.3	7.8	S 19	03.2	2.3	57.8	S 10	17 55	18 17	18 41	21 14	22 09	23 05	24 01
	07	288	31.7		27.2	221	11.1	7.9		19 05.5	2.1	57.8	20	18 02	18 24	18 50	21 28	22 24	23 21	24 16
	08	303	31.8		28.1	235	38.0	7.7		19 07.6	2.0	57.9	30	18 09	18 34	19 02	21 44	22 42	23 39	24 34
	09	318	32.0	..	29.1	250	04.7	7.8		19 09.6	2.0	57.9	35	18 14	18 39	19 10	21 52	22 52	23 49	24 44
	10	333	32.1		30.0	264	31.5	7.7		19 11.6	1.8	57.9	40	18 18	18 46	19 19	22 03	23 03	24 01	00 01
	11	348	32.2		30.9	278	58.2	7.7		19 13.4	1.7	57.9	45	18 24	18 55	19 31	22 15	23 17	24 15	00 15
	12	3 32.4	S 8	31.8	293	24.9	7.6	S 19	15.1	1.6	57.9	S 50	18 31	19 05	19 46	22 29	23 33	24 33	00 33	
	13	18 32.5		32.8	307	51.5	7.6		19 16.7	1.4	58.0	52	18 34	19 10	19 53	22 36	23 41	24 41	00 41	
	14	33 32.7		33.7	322	18.1	7.6		19 18.1	1.4	58.0	54	18 38	19 15	20 02	22 44	23 50	24 50	00 50	
	15	48 32.8	..	34.6	336	44.7	7.5		19 19.5	1.2	58.0	56	18 42	19 22	20 11	22 53	24 00	00 00	01 00	
	16	63 32.9		35.5	351	11.2	7.5		19 20.7	1.1	58.0	58	18 46	19 29	20 22	23 02	24 11	00 11	01 12	
	17	78 33.1		36.5	5 37.7	7.4	19 21.8	1.0	58.1	S 60		50	18 51	19 37	20 35	23 13	24 24	00 24	01 26	
	18	93 33.2	S 8	37.4	20 04.1	7.4	S 19	22.8	0.9	58.1	Day	SUN			MOON					
	19	108 33.3		38.3	34 30.5	7.4	19 23.7	0.8	58.1	13	Eqn. of Time	Mer. Pass.	Mer. Upper	Pass. Lower	Age	Phase				
	20	123 33.5		39.2	48 56.9	7.4	19 24.5	0.6	58.1	14	00 ^h									
	21	138 33.6	..	40.2	63 23.3	7.3	19 25.1	0.6	58.1	15	m s	m s	h m	h m	h m	d				
	22	153 33.7																		

G.M.T.	ARIES		VENUS -3.4		MARS +1.8		JUPITER -2.0		SATURN +0.7		STARS		
	G.H.A.		G.H.A.	Dec.	G.H.A.	Dec.	G.H.A.	Dec.	G.H.A.	Dec.	Name	S.H.A.	Dec.
d h	° ' "		° ' "	° ' "	° ' "	° ' "	° ' "	° ' "	° ' "	° ' "		° ' "	° ' "
16 00	24 16.2		206 05.2 N	2 24.7	167 00.6 S	14 44.4	83 54.3 S	21 11.5	88 51.3 S	21 38.9	Acamar	315 47.6	S 40 27.4
01	39 18.7		221 04.8	23.5	182 01.4	45.0	98 56.6	11.5	103 53.7	38.9	Achernar	335 55.3	S 57 25.9
02	54 21.1		236 04.4	22.3	197 02.2	45.6	113 58.9	11.4	118 56.1	38.9	Acrux	173 53.7	S 62 53.0
03	69 23.6		251 04.0	21.1	212 03.0	46.1	129 01.2	11.4	133 58.4	38.9	Adhara	255 43.2	S 28 55.0
04	84 26.1		266 03.7	19.9	227 03.7	46.7	144 03.5	11.4	149 00.8	38.9	Aldebaran	291 34.1	N 16 25.9
05	99 28.5		281 03.3	18.7	242 04.5	47.3	159 05.7	11.3	164 03.2	38.9			
06	114 31.0		296 02.9 N	2 17.5	257 05.3 S	14 47.9	174 08.0 S	21 11.3	179 05.6 S	21 38.9	Alioth	166 55.6	N 56 10.1
07	129 33.5		311 02.5	16.3	272 06.1	48.4	189 10.3	11.3	194 08.0	38.9	Alkaid	153 30.2	N 49 30.4
08	144 35.9		326 02.1	15.1	287 06.9	49.0	204 12.6	11.2	209 10.4	38.9	Al Na'ir	28 32.5	S 47 08.9
09	159 38.4		341 01.7	13.9	302 07.6	49.6	219 14.8	11.2	224 12.7	38.8	Alnilam	276 25.9	S 1 13.5
10	174 40.8		356 01.3	12.7	317 08.4	50.1	234 17.1	11.1	239 15.1	38.8	Alphard	218 34.7	S 8 29.4
11	189 43.3		11 01.0	11.5	332 09.2	50.7	249 19.4	11.1	254 17.5	38.8			
12	204 45.8		26 00.6 N	2 10.3	347 10.0 S	14 51.3	264 21.6 S	21 11.1	269 19.9 S	21 38.8	Alphecca	126 44.5	N 26 50.8
13	219 48.2		41 00.2	09.1	2 10.8	51.8	279 23.9	11.0	284 22.3	38.8	Alpheratz	358 23.7	N 28 52.9
14	234 50.7		55 59.8	07.9	17 11.5	52.4	294 26.2	11.0	299 24.7	38.8	Altair	62 46.4	N 8 46.2
15	249 53.2		70 59.4	06.7	32 12.3	53.0	309 28.5	11.0	314 27.0	38.8	Ankaa	353 53.9	S 42 30.8
16	264 55.6		85 59.0	05.5	47 13.1	53.5	324 30.7	10.9	329 29.4	38.8	Antares	113 14.5	S 26 20.8
17	279 58.1		100 58.6	04.4	62 13.9	54.1	339 33.0	10.9	344 31.8	38.8			
18	295 00.6		115 58.3 N	2 03.2	77 14.6 S	14 54.7	354 35.3 S	21 10.8	359 34.2 S	21 38.7	Arcturus	146 31.8	N 19 23.1
19	310 03.0		130 57.9	02.0	92 15.4	55.2	9 37.6	10.8	14 36.6	38.7	Atria	108 51.8	S 68 57.6
20	325 05.5		145 57.5	2 00.8	107 16.2	55.8	24 39.8	10.8	29 38.9	38.7	Avior	234 34.1	S 59 22.9
21	340 08.0		160 57.1	1 59.6	122 17.0	56.4	39 42.1	10.7	44 41.3	38.7	Bellatrix	279 13.8	N 6 19.0
22	355 10.4		175 56.7	58.4	137 17.7	56.9	54 44.4	10.7	59 43.7	38.7	Betelgeuse	271 43.5	N 7 24.0
23	10 12.9		190 56.3	57.2	152 18.5	57.5	69 46.6	10.6	74 46.1	38.7			
17 00	25 15.3		205 55.9 N	1 56.0	167 19.3 S	14 58.1	84 48.9 S	21 10.6	89 48.5 S	21 38.7	Canopus	264 13.3	S 52 40.2
01	40 17.8		220 55.6	54.8	182 20.1	58.6	99 51.2	10.6	104 50.8	38.7	Capella	281 32.0	N 45 57.4
02	55 20.3		235 55.2	53.6	197 20.9	59.2	114 53.4	10.5	119 53.2	38.7	Deneb	49 58.0	N 45 08.9
03	70 22.7		250 54.8	52.4	212 21.6	59.8	129 55.7	10.5	134 55.6	38.6	Denebola	183 13.8	N 14 47.3
04	85 25.2		265 54.4	51.2	227 22.4	60.3	144 58.0	10.5	149 58.0	38.6	Diphda	349 34.8	S 18 11.8
05	100 27.7		280 54.0	50.0	242 23.2	60.9	160 00.2	10.4	165 00.4	38.6			
06	115 30.1		295 53.6 N	1 48.8	257 24.0 S	15 01.5	175 02.5 S	21 10.4	180 02.7 S	21 38.6	Dubhe	194 40.2	N 61 57.4
07	130 32.6		310 53.3	47.6	272 24.7	02.0	190 04.8	10.3	195 05.1	38.6	Elnath	279 01.9	N 28 34.5
08	145 35.1		325 52.9	46.4	287 25.5	02.6	205 07.1	10.3	210 07.5	38.6	Eltanin	91 04.6	N 51 30.0
09	160 37.5		340 52.5	45.2	302 26.3	03.2	220 09.3	10.3	225 09.9	38.6	Enif	34 25.4	N 9 42.1
10	175 40.0		355 52.1	44.0	317 27.0	03.7	235 11.6	10.2	240 12.3	38.6	Fomalhaut	16 06.8	S 29 49.5
11	190 42.5		10 51.7	42.8	332 27.8	04.3	250 13.9	10.2	255 14.6	38.5			
12	205 44.9		25 51.3 N	1 41.6	347 28.6 S	15 04.8	265 16.1 S	21 10.1	270 17.0 S	21 38.5	Gacrux	172 45.0	S 56 53.7
13	220 47.4		40 50.9	40.4	2 29.4	05.4	280 18.4	10.1	285 19.4	38.5	Gienah	176 32.9	S 17 19.6
14	235 49.8		55 50.6	39.2	17 30.1	06.0	295 20.6	10.1	300 21.8	38.5	Hadar	149 44.1	S 60 11.2
15	250 52.3		70 50.2	38.0	32 30.9	06.5	310 22.9	10.0	315 24.1	38.5	Hamal	328 44.6	N 23 16.9
16	265 54.8		85 49.8	36.8	47 31.7	07.1	325 25.2	10.0	330 26.5	38.5	Kaus Aust.	84 35.8	S 34 24.2
17	280 57.2		100 49.4	35.6	62 32.5	07.7	340 27.4	10.0	345 28.9	38.5			
18	295 59.7		115 49.0 N	1 34.4	77 33.2 S	15 08.2	355 29.7 S	21 09.9	0 31.3 S	21 38.5	Kochab	137 19.5	N 74 19.0
19	311 02.2		130 48.6	33.2	92 34.0	08.8	10 32.0	09.9	15 33.6	38.5	Markab	14 17.1	N 15 00.1
20	326 04.6		145 48.2	32.0	107 34.8	09.4	25 34.2	09.8	30 36.0	38.4	Menkar	314 55.7	N 3 56.4
21	341 07.1		160 47.9	30.8	122 35.5	09.9	40 36.5	09.8	45 38.4	38.4	Mekent	148 54.1	S 36 10.8
22	356 09.6		175 47.5	29.6	137 36.3	10.5	55 38.8	09.8	60 40.8	38.4	Miaplacidus	221 48.3	S 69 33.3
23	11 12.0		190 47.1	28.4	152 37.1	11.0	70 41.0	09.7	75 43.2	38.4			
18 00	26 14.5		205 46.7 N	1 27.2	167 37.9 S	15 11.6	85 43.3 S	21 09.7	90 45.5 S	21 38.4	Mirfak	309 36.0	N 49 43.4
01	41 16.9		220 46.3	26.0	182 38.6	12.2	100 45.6	09.6	105 47.9	38.4	Nunki	76 46.9	S 26 20.7
02	56 19.4		235 45.9	24.8	197 39.4	12.7	115 47.8	09.6	120 50.3	38.4	Peacock	54 20.7	S 56 51.7
03	71 21.9		250 45.6	23.6	212 40.2	13.3	130 50.1	09.6	135 52.7	38.4	Pollux	244 15.5	N 28 07.1
04	86 24.3		265 45.2	22.4	227 40.9	13.8	145 52.3	09.5	150 55.0	38.3	Procyon	245 40.7	N 5 19.5
05	101 26.8		280 44.8	21.2	242 41.7	14.4	160 54.6	09.5	165 57.4	38.3			
06	116 29.3		295 44.4 N	1 20.0	257 42.5 S	15 15.0	175 56.9 S	21 09.4	180 59.8 S	21 38.3	Rasalhague	96 42.9	N 12 35.5
07	131 31.7		310 44.0	18.8	272 43.2	15.5	190 59.1	09.4	196 02.2	38.3	Regulus	208 25.3	N 12 09.4
08	146 34.2		325 43.6	17.6	287 44.0	16.1	206 01.4	09.4	211 04.5	38.3	Rigel	281 49.5	S 8 14.6
09	161 36.7		340 43.2	16.4	302 44.8	16.6	221 03.6	09.3	226 06.9	38.3	Rigel Kent.	140 45.8	S 60 40.5
10	176 39.1		355 42.9	15.2	317 45.5	17.2	236 05.9	09.3	241 09.3	38.3	Sabik	102 57.6	S 15 40.6
11	191 41.6		10 42.5	14.0	332 46.3	17.8	251 08.2	09.2	256 11.6	38.3			
12	206 44.1		25 42.1 N	1 12.8	347 47.1 S	15 18.3	266 10.4 S	21 09.2	271 14.0 S	21 38.2	Schedar	350 24.6	N 56 19.7
13	221 46.5		40 41.7	11.6	2 47.8	18.9	281 12.7	09.2	286 16.4	38.2	Shaula	97 15.3	S 37 04.6
14	236 49.0		55 41.3	10.4	17 48.6	19.4	296 14.9	09.1	301 18.8	38.2	Sirius	259 08.1	S 16 39.6
15	251 51.4		70 40.9	09.2	32 49.4	20.0	311 17.2	09.1	316 21.1	38.2	Spica	159 12.8	S 10 57.5
16	266 53.9		85 40.6	08.0	47 50.1	20.6	326 19.4	09.0	331 23.5	38.2	Suhail	223 21.4	S 43 16.4
17	281 56.4		100 40.2	06.8	62 50.9	21.1	341 21.7	09.0	346 25.9	38.2			
18	296 58.8		115 39.8 N	1 05.6	77 51.7 S	15 21.7	356 24.0 S	21 08.9	1 28.3 S	21 38.2	Vega	81 05.6	N 38 45.2
19	312 01.3		130 39.4	04.4	92 52.4	22.2	11 26.2	08.9	16 30.6	38.2	Zuben'ubi	137 49.1	S 15 52.8
20	327 03.8		145 39.0	03.2	107 53.2	22.8	26 28.5	08.9	31 33.0	38.1			
21	342 06.2		160 38.6	02.0	122 54.0	23.4	41 30.7	08.8	46 35.4	38.1			
22	357 08.7		175 38.3	1 00.8	137 54.7	23.9	56 33.0	08.8	61 37.7	38.1	Venus	180 40.6	10 17
23	12 11.2		190 37.9	0 59.6	152 55.5	24.5	71 35.2	08.7	76 40.1	38.1	Mars	142 04.0	12 50
											Jupiter	59 33.6	18 18
											Saturn	64 33.2	17 58
Mer. Pass. 22 15.3			v -0.4	d 1.2	v 0.8	d 0.6	v 2.3	d 0.0	v 2.4	d 0.0			

G.M.T.	SUN		MOON					Lat.	Twilight		Sun-rise	Moonrise				
	G.H.A.		G.H.A.		Dec.		H.P.		Naut.	Civil		16	17	18	19	
	d	h	d	h	d	h					d					h
MONDAY	16 00	183 34.0	S 8 42.9	106 42.2	7.2	S 19 26.4	0.1	58.2	N 72	05 03	06 21	07 33	16 31	16 40	16 41	16 40
	01	198 34.2	43.9	121 08.4	7.2	19 26.5	0.1	58.2	68	05 08	06 13	07 10	15 31	16 01	16 16	16 24
	02	213 34.3	44.8	135 34.6	7.2	19 26.6	0.1	58.3	66	05 10	06 09	07 02	14 56	15 33	15 56	16 10
	03	228 34.4	45.7	150 00.8	7.2	19 26.5	0.2	58.3	64	05 11	06 06	06 55	14 31	15 12	15 39	15 59
	04	243 34.6	46.6	164 27.0	7.1	19 26.3	0.3	58.3	62	05 12	06 03	06 49	14 11	14 55	15 26	15 50
	05	258 34.7	47.6	178 53.1	7.1	19 26.0	0.4	58.3	60	05 13	06 01	06 44	13 55	14 40	15 14	15 41
	06	273 34.8	S 8 48.5	193 19.2	7.1	S 19 25.6	0.6	58.3	N 58	05 14	05 59	06 39	13 42	14 28	15 05	15 34
	07	288 35.0	49.4	207 45.3	7.1	19 25.0	0.6	58.4	56	05 14	05 57	06 35	13 30	14 17	14 56	15 27
	08	303 35.1	50.3	222 11.4	7.0	19 24.4	0.8	58.4	54	05 14	05 55	06 31	13 20	14 08	14 48	15 22
	09	318 35.2	51.2	236 37.4	7.1	19 23.6	0.9	58.4	52	05 14	05 54	06 28	13 10	14 00	14 41	15 16
	10	333 35.4	52.2	251 03.5	7.0	19 22.7	1.1	58.4	50	05 14	05 52	06 25	13 02	13 52	14 35	15 12
	11	348 35.5	53.1	265 29.5	7.0	19 21.6	1.1	58.5	45	05 14	05 48	06 18	12 45	13 36	14 21	15 02
	12	3 35.6	S 8 54.0	279 55.5	6.9	S 19 20.5	1.3	58.5	N 40	05 13	05 45	06 12	12 31	13 23	14 10	14 53
	13	18 35.8	54.9	294 21.4	7.0	19 19.2	1.4	58.5	35	05 12	05 42	06 07	12 18	13 12	14 01	14 46
	14	33 35.9	55.8	308 47.4	6.9	19 17.8	1.5	58.5	30	05 11	05 39	06 03	12 08	13 02	13 52	14 39
	15	48 36.0	56.8	323 13.3	6.9	19 16.3	1.7	58.5	20	05 07	05 33	05 55	11 50	12 45	13 38	14 28
	16	63 36.2	57.7	337 39.2	6.9	19 14.6	1.7	58.6	N 10	05 03	05 27	05 48	11 34	12 30	13 25	14 18
	17	78 36.3	58.6	352 05.1	6.9	19 12.9	1.9	58.6	0	04 57	05 21	05 42	11 19	12 16	13 13	14 09
	18	93 36.4	S 8 59.5	6 31.0	6.9	S 19 11.0	2.0	58.6	S 10	04 49	05 14	05 35	11 05	12 02	13 01	13 59
	19	108 36.5	9 00.4	20 56.9	6.9	19 09.0	2.2	58.6	20	04 40	05 06	05 28	10 49	11 47	12 48	13 49
	20	123 36.7	01.4	35 22.8	6.9	19 06.8	2.2	58.7	30	04 27	04 56	05 20	10 30	11 30	12 33	13 38
	21	138 36.8	02.3	49 48.7	6.8	19 04.6	2.4	58.7	35	04 19	04 49	05 15	10 20	11 21	12 25	13 31
	22	153 36.9	03.2	64 14.5	6.8	19 02.2	2.5	58.7	40	04 09	04 42	05 10	10 08	11 09	12 15	13 24
	23	168 37.1	04.1	78 40.3	6.9	18 59.7	2.6	58.7	45	03 56	04 33	05 04	09 54	10 56	12 04	13 15
TUESDAY	17 00	183 37.2	S 9 05.0	93 06.2	6.8	S 18 57.1	2.8	58.7	S 50	03 40	04 22	04 56	09 37	10 40	11 50	13 05
	01	198 37.3	05.9	107 32.0	6.8	18 54.3	2.8	58.8	52	03 32	04 16	04 52	09 28	10 32	11 43	13 00
	02	213 37.5	06.9	121 57.8	6.8	18 51.5	3.0	58.8	54	03 24	04 11	04 48	09 19	10 23	11 36	12 54
	03	228 37.6	07.8	136 23.6	6.8	18 48.5	3.1	58.8	56	03 14	04 04	04 44	09 09	10 14	11 28	12 48
	04	243 37.7	08.7	150 49.4	6.9	18 45.4	3.3	58.8	58	03 02	03 56	04 39	08 58	10 03	11 19	12 41
	05	258 37.8	09.6	165 15.3	6.8	18 42.1	3.3	58.8	S 60	02 48	03 48	04 33	08 44	09 51	11 08	12 34
	06	273 38.0	S 9 10.5	179 41.1	6.8	S 18 38.8	3.5	58.9	Lat.		Twilight		Moonset			
	07	288 38.1	11.4	194 06.9	6.8	18 35.3	3.6	58.9	Sun-set		Civil		16		17	
	08	303 38.2	12.4	208 32.7	6.8	18 31.7	3.7	58.9	h m		h m		h m		h m	
	09	318 38.4	13.3	222 58.5	6.8	18 28.0	3.8	58.9	h m		h m		h m		h m	
	10	333 38.5	14.2	237 24.3	6.8	18 24.2	4.0	59.0	N 72	15 56	17 08	18 25	18 38	20 27	22 24	24 02
	11	348 38.6	15.1	251 50.1	6.8	18 20.2	4.1	59.0	N 70	16 09	17 12	18 23	18 38	20 27	22 24	24 21
	12	3 38.7	S 9 16.0	266 15.9	6.8	S 18 16.1	4.2	59.0	68	16 19	17 17	18 21	19 38	21 07	22 49	24 37
	13	18 38.9	16.9	280 41.7	6.8	18 11.9	4.3	59.0	66	16 27	17 20	18 19	20 12	21 34	23 08	24 49
	14	33 39.0	17.8	295 07.5	6.8	18 07.6	4.4	59.0	64	16 35	17 23	18 18	20 37	21 55	23 24	24 59
	15	48 39.1	18.8	309 33.3	6.8	18 03.2	4.5	59.1	62	16 41	17 26	18 17	20 57	22 11	23 36	25 08
	16	63 39.2	19.7	323 59.1	6.8	17 58.7	4.7	59.1	60	16 46	17 29	18 17	21 12	22 25	23 47	25 15
	17	78 39.4	20.6	338 24.9	6.9	17 54.0	4.8	59.1	N 58	16 51	17 31	18 16	21 26	22 37	23 57	25 21
	18	93 39.5	S 9 21.5	352 50.8	6.8	S 17 49.2	4.9	59.1	56	16 55	17 33	18 16	21 38	22 47	24 05	00 05
	19	108 39.6	22.4	7 16.6	6.8	17 44.3	5.0	59.1	54	16 59	17 35	18 16	21 48	22 57	24 12	00 12
	20	123 39.7	23.3	21 42.4	6.9	17 39.3	5.1	59.2	52	17 02	17 37	18 15	21 57	23 04	24 19	00 19
	21	138 39.9	24.2	36 08.3	6.9	17 34.2	5.3	59.2	50	17 05	17 38	18 15	22 05	23 12	24 24	00 24
	22	153 40.0	25.1	50 34.2	6.8	17 28.9	5.4	59.2	45	17 12	17 42	18 16	22 22	23 27	24 37	00 37
	23	168 40.1	26.1	65 00.0	6.9	17 23.5	5.4	59.2	N 40	17 18	17 45	18 17	22 36	23 40	24 47	00 47
WEDNESDAY	18 00	183 40.2	S 9 27.0	79 25.9	6.9	S 17 18.1	5.6	59.2	35	17 23	17 49	18 18	22 48	23 51	24 56	00 56
	01	198 40.4	27.9	93 51.8	6.9	17 12.5	5.8	59.3	30	17 27	17 52	18 19	22 59	24 00	00 00	01 04
	02	213 40.5	28.8	108 17.7	6.9	17 06.7	5.8	59.3	20	17 35	17 57	18 23	23 16	24 16	00 16	01 17
	03	228 40.6	29.7	122 43.6	7.0	17 00.9	5.9	59.3	N 10	17 42	18 03	18 28	23 32	24 30	00 30	01 29
	04	243 40.7	30.6	137 09.6	6.9	16 55.0	6.1	59.3	0	17 49	18 10	18 34	23 46	24 43	00 43	01 40
	05	258 40.9	31.5	151 35.5	7.0	16 48.9	6.1	59.3	S 10	17 55	18 17	18 42	24 01	00 01	00 56	01 50
	06	273 41.0	S 9 32.4	166 01.5	7.0	S 16 42.8	6.3	59.4	20	18 03	18 25	18 52	24 16	00 16	01 10	02 02
	07	288 41.1	33.3	180 27.5	6.9	16 36.5	6.4	59.4	30	18 11	18 36	19 05	24 34	00 34	01 26	02 15
	08	303 41.2	34.3	194 53.4	7.1	16 30.1	6.5	59.4	35	18 16	18 42	19 13	24 44	00 44	01 35	02 22
	09	318 41.3	35.2	209 19.5	7.0	16 23.6	6.6	59.4	40	18 22	18 50	19 23	00 01	00 56	01 45	02 30
	10	333 41.5	36.1	223 45.5	7.0	16 17.0	6.7	59.4	45	18 28	18 59	19 36	00 15	01 09	01 58	02 40
	11	348 41.6	37.0	238 11.5	7.1	16 10.3	6.8	59.4	S 50	18 36	19 10	19 52	00 33	01 26	02 12	02 52
	12	3 41.7	S 9 37.9	252 37.6	7.1	S 16 03.5	6.9	59.5	52	18 40	19 16	20 00	00 41	01 34	02 19	02 57
	13	18 41.8	38.8	267 03.7	7.1	15 56.6	7.0	59.5	54	18 44	19 22	20 09	00 50	01 42	02 26	03 03
	14	33 41.9	39.7	281 29.8	7.1	15 49.6	7.2	59.5	56	18 48	19 28	20 19	01 00	01 52	02 35	03 10
	15	48 42.1	40.6	295 55.9	7.1	15 42.4	7.2	59.5	58	18 53	19 36	20 31	01 12	02 03	02 45	03 17
	16	63 42.2	41.5	310 22.0	7.2	15 35.2	7.3	59.5	S 60	18 59	19 45	20 46	01 26	02 16	02 56	03 26
	17	78 42.3	42.4	324 48.2	7.1	15 27.9	7.5	59.6	Day		SUN		MOON		Mer. Pass.	
	18	93 42.4	S 9 43.3	339 14.3	7.2	S 15 20.4	7.5	59.6	Eqn. of Time		Mer. Pass.		Upper		Lower	
	19	108 42.5	44.3	353 40.5	7.3	15 12.9	7.7	59.6	00h		12h		h m		h m	
	20	123 42.7	45.2	8 06.8	7.2	15 05.2	7.7	59.6	m s		m s		h m	h m	h m	d
	21	138 42.8	46.1	22 33.0	7.3	14 57.5	7.9	59.6	16	14 16	14 22	11 46	17 33	05 05	07 08	
	22	153 42.9	47.0	36 59.3	7.3	14 49.6	7.9	59.6	17	14 29	14 35	11 45	18 30	06 01	08 09	

		ARIES		VENUS -3.4		MARS +1.8		JUPITER -1.9		SATURN +0.8		STARS			
G.M.T.		G.H.A.		G.H.A. Dec.		G.H.A. Dec.		G.H.A. Dec.		G.H.A. Dec.		Name		S.H.A. Dec.	
d	h														
19	00	27 13.6	205 37.5 N 0 58.3	167 56.3 S 15 25.0	86 37.5 S 21 08.7	91 42.5 S 21 38.1	Acamar	315 47.6	S 40 27.4						
	01	42 16.1	220 37.1 57.1	182 57.0 25.6	101 39.7 08.7	106 44.9 38.1	Achernar	335 55.3	S 57 25.9						
	02	57 18.6	235 36.7 55.9	197 57.8 26.1	116 42.0 08.6	121 47.2 38.1	Acrux	173 53.7	S 62 53.0						
	03	72 21.0	250 36.3 .. 54.7	212 58.6 .. 26.7	131 44.3 .. 08.6	136 49.6 .. 38.1	Adhara	255 43.2	S 28 55.0						
	04	87 23.5	265 35.9 53.5	227 59.3 27.2	146 46.5 08.5	151 52.0 38.0	Aldebaran	291 34.0	N 16 25.9						
T H U R S D A Y	05	102 25.9	280 35.6 52.3	243 00.1 27.8	161 48.8 08.5	166 54.3 38.0									
	06	117 28.4	295 35.2 N 0 51.1	258 00.8 S 15 28.4	176 51.0 S 21 08.4	181 56.7 S 21 38.0	Alioth	166 55.6	N 56 10.1						
	07	132 30.9	310 34.8 49.9	273 01.6 28.9	191 53.3 08.4	196 59.1 38.0	Alkaid	153 30.2	N 49 30.4						
	08	147 33.3	325 34.4 48.7	288 02.4 29.5	206 55.5 08.4	212 01.5 38.0	Al Na'ir	28 32.6	S 47 08.8						
	09	162 35.8	340 34.0 .. 47.5	303 03.1 .. 30.0	221 57.8 .. 08.3	227 03.8 .. 38.0	Alnilam	276 25.9	S 1 13.3						
F R I D A Y	10	177 38.3	355 33.6 46.3	318 03.9 30.6	237 00.0 08.3	242 06.2 38.0	Alphard	218 34.6	S 8 29.4						
	11	192 40.7	10 33.2 45.1	333 04.7 31.1	252 02.3 08.2	257 08.6 38.0									
	12	207 43.2	25 33.2 N 0 43.9	348 05.4 S 15 31.7	267 04.5 S 21 08.2	272 10.9 S 21 37.9	Alphecca	126 44.5	N 26 50.8						
	13	222 45.7	40 32.5 42.7	3 06.2 32.2	282 06.8 08.2	287 13.3 37.9	Alpheratz	358 23.7	N 28 52.9						
	14	237 48.1	55 32.1 41.5	18 06.9 32.8	297 09.0 08.1	302 15.7 37.9	Altair	62 46.4	N 8 46.2						
S A T U R D A Y	15	252 50.6	70 31.7 .. 40.3	33 07.7 .. 33.4	312 11.3 .. 08.1	317 18.0 .. 37.9	Ankaa	353 53.9	S 42 30.9						
	16	267 53.1	85 31.3 39.1	48 08.5 33.9	327 13.5 08.0	332 20.4 37.9	Antares	113 14.5	S 26 20.8						
	17	282 55.5	100 30.9 37.9	63 09.2 34.5	342 15.8 08.0	347 22.8 37.9									
	18	297 58.0	115 30.6 N 0 36.7	78 10.0 S 15 35.0	357 18.0 S 21 07.9	2 25.1 S 21 37.9	Arcturus	146 31.8	N 19 23.1						
	19	313 00.4	130 30.2 35.5	93 10.7 35.6	12 20.3 07.9	17 27.5 37.9	Atria	108 51.9	S 68 57.6						
S U N D A Y	20	328 02.9	145 29.8 34.2	108 11.5 36.1	27 22.5 07.9	32 29.9 37.8	Avior	234 34.1	S 59 22.9						
	21	343 05.4	160 29.4 .. 33.0	123 12.3 .. 36.7	42 24.8 .. 07.8	47 32.2 .. 37.8	Bellatrix	279 13.8	N 6 19.0						
	22	358 07.8	175 29.0 31.8	138 13.0 37.2	57 27.0 07.8	62 34.6 37.8	Betelgeuse	271 43.5	N 7 24.0						
	23	13 10.3	190 28.6 30.6	153 13.8 37.8	72 29.2 07.7	77 37.0 37.8									
	24	28 12.8	205 28.2 N 0 29.4	168 14.5 S 15 38.3	87 31.5 S 21 07.7	92 39.3 S 21 37.8	Canopus	264 13.3	S 52 40.2						
M O N D A Y	01	43 15.2	220 27.9 28.2	183 15.3 38.9	102 33.7 07.7	107 41.7 37.8	Capella	281 32.0	N 45 57.4						
	02	58 17.7	235 27.5 27.0	198 16.0 39.4	117 36.0 07.6	122 44.1 37.8	Deneb	49 58.0	N 45 08.9						
	03	73 20.2	250 27.1 .. 25.8	213 16.8 .. 40.0	132 38.2 .. 07.6	137 46.4 .. 37.7	Denebola	183 13.8	N 14 47.3						
	04	88 22.6	265 26.7 24.6	228 17.6 40.5	147 40.5 07.5	152 48.8 37.7	Diphda	349 34.8	S 18 11.8						
	05	103 25.1	280 26.3 23.4	243 18.3 41.1	162 42.7 07.5	167 51.2 37.7									
T U E S D A Y	06	118 27.5	295 25.9 N 0 22.2	258 19.1 S 15 41.6	177 45.0 S 21 07.4	182 53.5 S 21 37.7	Dubhe	194 40.1	N 61 57.4						
	07	133 30.0	310 25.5 21.0	273 19.8 42.2	192 47.2 07.4	197 55.9 37.7	Elmath	279 01.9	N 28 34.5						
	08	148 32.5	325 25.2 19.8	288 20.6 42.8	202 49.5 07.4	212 58.3 37.7	Eltanin	91 04.6	N 51 30.0						
	09	163 34.9	340 24.8 .. 18.6	303 21.3 .. 43.3	222 51.7 .. 07.3	228 00.6 .. 37.7	Enif	34 25.4	N 9 42.2						
	10	178 37.4	355 24.4 17.4	318 22.1 43.9	237 53.9 07.3	243 03.0 37.6	Fomalhaut	16 06.8	S 29 49.5						
W E D N E S D A Y	11	193 39.9	10 24.0 16.1	333 22.9 44.4	252 56.2 07.2	258 05.4 37.6									
	12	208 42.3	25 23.6 N 0 14.9	348 23.6 S 15 45.0	267 58.4 S 21 07.2	273 07.7 S 21 37.6	Gacrux	172 45.0	S 56 53.7						
	13	223 44.8	40 23.2 13.7	3 24.4 45.5	283 00.7 07.1	288 10.1 37.6	Gienah	176 32.9	S 17 19.5						
	14	238 47.3	55 22.8 12.5	18 25.1 46.1	298 02.9 07.1	303 12.5 37.6	Hadar	149 44.1	S 60 11.2						
	15	253 49.7	70 22.5 .. 11.3	33 25.9 .. 46.6	313 05.2 .. 07.0	318 14.8 .. 37.6	Hamal	328 44.6	N 23 16.9						
T H U R S D A Y	16	268 52.2	85 22.1 10.1	48 26.6 47.2	328 07.4 07.0	333 17.2 37.6	Kaus Aust.	84 35.8	S 34 24.2						
	17	283 54.7	100 21.7 08.9	63 27.4 47.7	343 09.6 07.0	348 19.6 37.6									
	18	298 57.1	115 21.3 N 0 07.7	78 28.1 S 15 48.3	358 11.9 S 21 06.9	3 21.9 S 21 37.5	Kochab	137 19.5	N 74 18.9						
	19	313 59.6	130 20.9 06.5	93 28.9 48.8	13 14.1 06.9	18 24.3 37.5	Markab	14 17.1	N 15 00.1						
	20	329 02.0	145 20.5 05.3	108 29.6 49.3	28 16.4 06.8	33 26.7 37.5	Menkar	314 55.7	N 3 56.4						
F R I D A Y	21	344 04.5	160 20.1 .. 04.1	123 30.4 .. 49.9	43 18.6 .. 06.8	48 29.0 .. 37.5	Menkent	148 54.1	S 36 10.8						
	22	359 07.0	175 19.8 02.9	138 31.2 50.4	58 20.8 06.7	63 31.4 37.5	Miaplacidus	221 48.2	S 69 33.3						
	23	14 09.4	190 19.4 01.6	153 31.9 51.0	73 23.1 06.7	78 33.7 37.5									
	24	29 11.9	205 19.0 N 0 00.4	168 32.7 S 15 51.5	88 25.3 S 21 06.6	93 36.1 S 21 37.5	Mirfak	309 35.9	N 49 43.3						
	01	44 14.4	220 18.6 S 0 00.7	183 33.4 52.1	103 27.6 06.6	108 38.5 37.4	Nunki	76 46.9	S 26 20.7						
S A T U R D A Y	02	59 16.8	235 18.2 01.9	198 34.2 52.6	118 29.8 06.6	123 40.8 37.4	Peacock	54 20.8	S 56 51.7						
	03	74 19.3	250 17.8 .. 03.1	213 34.9 .. 53.2	133 32.0 .. 06.5	138 43.2 .. 37.4	Pollux	244 15.5	N 28 07.1						
	04	89 21.8	265 17.4 04.4	228 35.7 53.7	148 34.3 06.5	153 45.6 37.4	Procyon	245 40.6	N 5 19.5						
	05	104 24.2	280 17.1 05.6	243 36.4 54.3	163 36.5 06.4	168 47.9 37.4									
	06	119 26.7	295 16.7 S 0 06.8	258 37.2 S 15 54.8	178 38.8 S 21 06.4	183 50.3 S 21 37.4	Rasalhague	96 42.9	N 12 35.5						
S U N D A Y	07	134 29.1	310 16.3 08.0	273 37.9 55.4	193 41.0 06.3	198 52.6 37.4	Regulus	208 25.3	N 12 09.4						
	08	149 31.6	325 15.9 09.2	288 38.7 55.9	208 43.2 06.3	213 55.0 37.3	Rigel	281 49.4	S 8 14.6						
	09	164 34.1	340 15.5 .. 10.4	303 39.4 .. 56.5	223 45.5 .. 06.2	228 57.4 .. 37.3	Rigel Kent.	140 45.8	S 60 40.5						
	10	179 36.5	355 15.1 11.6	318 40.2 57.0	238 47.7 06.2	243 59.7 37.3	Sabik	102 57.6	S 15 40.6						
	11	194 39.0	10 14.7 12.9	333 40.9 57.6	253 49.9 06.2	259 02.1 37.3									
M O N D A Y	12	209 41.5	25 14.4 S 0 14.1	348 41.7 S 15 58.1	268 52.2 S 21 06.1	274 04.4 S 21 37.3	Schedar	350 24.6	N 56 19.7						
	13	224 43.9	40 14.0 15.3	3 42.4 58.6	283 54.4 06.1	289 06.8 37.3	Shaula	97 15.3	S 37 04.6						
	14	239 46.4	55 13.6 16.5	18 43.2 59.2	298 56.6 06.0	304 09.2 37.3	Sirius	259 08.1	S 16 39.6						
	15	254 48.9	70 13.2 .. 17.7	33 43.9 15 59.7	313 58.9 .. 06.0	319 11.5 .. 37.2	Spicu	159 12.8	N 10 57.5						
	16	269 51.3	85 12.8 18.9	48 44.7 16 00.3	329 01.1 05.9	334 13.9 37.2	Suhail	223 21.4	S 43 16.4						
T U E S D A Y	17	284 53.8	100 12.4 20.1	63 45.4 08.4	344 03.3 05.9	349 16.3 37.2									
	18	299 56.3	115 12.0 S 0 21.3	78 46.2 S 16 01.4	359 05.6 S 21 05.8	4 18.6 S 21 37.2	Vega	81 05.6	N 38 45.2						
	19	314 58.7	130 11.6 22.5	93 46.9 01.9	14 07.8 05.8	19 21.0 37.2	Zuben'ubi	137 49.1	S 15 52.8						
	20	330 01.2	145 11.3 23.7	108 47.7 02.5	29 10.0 05.7	34 23.3 37.2									
	21	345 03.6	160 10.9 .. 25.0	123 48.4 .. 03.0	44 12.3 .. 05.7	49 25.7 .. 37.1									
W E D N E S D A Y	22	0 06.1	175 10.5 26.2	138 49.1 03.6	59 14.5 05.6	64 28.1 37.1	Venus	177 15.4	10 18						
	23	15 08.6	190 10.1 27.4	153 49.9 04.1	74 16.7 05.6	79 30.4 37.1	Mars	140 01.7	12 46						
	24						Jupiter	59 18.7	18 07						
	25						Saturn	64 26.5	17 47						
	26														
Mer. Pass. 22 03:5		v -0.4 d 1.2		v 0.8 d 0.6		v 2.2 d 0.0		v 2.4 d 0.0							

G.M.T.	SUN				MOON				Lat.	Twilight		Sun-rise	Moonrise						
	G.H.A.		Dec.	H.P.	G.H.A.		Dec.	H.P.		Naut.	Civil		19	20	21	22			
	°	'			°	'											°	'	
d h	°	'	°	'	°	'	°	'	°	'	°	'	°	'	°	'			
1900	183	43.1	S	9 48.8	65	51.9	7.3	S 14	33.6	8.1	59.7	N 72	05 16	06 35	07 48	17 01	16 50	16 40	16 32
01	198	43.2		49.7	80	18.2	7.3	14	25.5	8.3	59.7	N 70	05 17	06 28	07 34	16 40	16 38	16 36	16 33
02	213	43.4		50.6	94	44.5	7.4	14	17.2	8.3	59.7	68	05 18	06 23	07 22	16 24	16 29	16 32	16 35
03	228	43.5		51.5	109	10.9	7.4	14	08.9	8.4	59.7	66	05 19	06 19	07 12	16 10	16 21	16 29	16 36
04	243	43.6		52.4	123	37.3	7.4	14	00.5	8.6	59.7	64	05 20	06 15	07 04	15 59	16 14	16 26	16 38
05	258	43.7		53.3	138	03.7	7.5	13	51.9	8.6	59.7	62	05 20	06 11	06 57	15 50	16 08	16 24	16 39
06	273	43.8	S	9 54.2	152	30.2	7.5	S 13	43.3	8.7	59.8	60	05 20	06 08	06 51	15 41	16 03	16 22	16 39
07	288	43.9		55.1	166	56.7	7.5	13	34.6	8.8	59.8	N 58	05 20	06 05	06 46	15 34	15 59	16 20	16 40
08	303	44.1		56.0	181	23.2	7.5	13	25.8	8.9	59.8	56	05 20	06 03	06 41	15 27	15 54	16 18	16 41
09	318	44.2		56.9	195	49.7	7.5	13	16.9	9.0	59.8	54	05 20	06 01	06 37	15 22	15 51	16 17	16 42
10	333	44.3		57.8	210	16.2	7.6	13	07.9	9.0	59.8	52	05 19	05 59	06 33	15 16	15 47	16 15	16 42
11	348	44.4		58.7	224	42.8	7.6	12	58.9	9.2	59.8	50	05 19	05 57	06 29	15 12	15 44	16 14	16 43
12	3	44.5	S	9 59.6	239	09.4	7.6	S 12	49.7	9.2	59.8	45	05 18	05 52	06 22	15 02	15 38	16 12	16 44
13	18	44.6	10	00.5	253	36.0	7.7	12	40.5	9.4	59.9	N 40	05 16	05 48	06 16	14 53	15 32	16 09	16 45
14	33	44.8		01.4	268	02.7	7.7	12	31.1	9.4	59.9	35	05 15	05 44	06 10	14 46	15 28	16 07	16 46
15	48	44.9		02.3	282	29.4	7.7	12	21.7	9.5	59.9	30	05 13	05 41	06 05	14 39	15 24	16 06	16 47
16	63	45.0		03.2	296	56.1	7.7	12	12.2	9.5	59.9	20	05 08	05 34	05 56	14 28	15 16	16 03	16 48
17	78	45.1		04.2	311	22.8	7.7	12	02.7	9.7	59.9	N 10	05 03	05 28	05 49	14 18	15 10	16 00	16 49
18	93	45.2	S 10	05.1	325	49.5	7.8	S 11	53.0	9.7	59.9	0	04 56	05 20	05 42	14 09	15 04	15 57	16 51
19	108	45.3		06.0	340	16.3	7.8	11	43.3	9.8	59.9	S 10	04 48	05 13	05 34	13 59	14 58	15 55	16 52
20	123	45.4		06.9	354	43.1	7.9	11	33.5	9.9	59.9	20	04 37	05 04	05 26	13 49	14 51	15 52	16 53
21	138	45.5		07.8	9	10.0	7.8	11	23.6	10.0	60.0	30	04 23	04 52	05 17	13 38	14 44	15 49	16 55
22	153	45.7		08.7	23	36.8	7.9	11	13.6	10.0	60.0	35	04 14	04 45	05 11	13 31	14 39	15 48	16 56
23	168	45.8		09.6	38	03.7	7.9	11	03.6	10.2	60.0	40	04 04	04 37	05 05	13 24	14 35	15 46	16 57
2000	183	45.9	S 10	10.5	52	30.6	7.9	S 10	53.4	10.1	60.0	45	03 50	04 27	04 58	13 15	14 29	15 43	16 58
01	198	46.0		11.4	66	57.5	8.0	10	43.3	10.3	60.0	S 50	03 33	04 15	04 50	13 05	14 22	15 41	16 59
02	213	46.1		12.3	81	24.5	8.0	10	33.0	10.3	60.0	52	03 25	04 10	04 46	13 00	14 19	15 39	17 00
03	228	46.2		13.2	95	51.5	8.0	10	22.7	10.4	60.0	54	03 15	04 03	04 41	12 54	14 15	15 38	17 01
04	243	46.3		14.1	110	18.5	8.0	10	12.3	10.5	60.0	56	03 04	03 56	04 36	12 48	14 12	15 37	17 01
05	258	46.4		15.0	124	45.5	8.1	10	01.8	10.5	60.0	58	02 51	03 48	04 31	12 41	14 07	15 35	17 02
06	273	46.5	S 10	15.9	139	12.6	8.1	S 9	51.3	10.6	60.0	S 60	02 36	03 38	04 25	12 34	14 03	15 33	17 03
07	288	46.7		16.8	153	39.7	8.1	9	40.7	10.7	60.1								
08	303	46.8		17.6	168	06.8	8.2	9	30.0	10.7	60.1	Lat.	Sun-set	Twilight		Moonset			
09	318	46.9		18.5	182	34.0	8.1	9	19.3	10.8	60.1			Civil	Naut.	19	20	21	22
10	333	47.0		19.4	197	01.1	8.2	9	08.5	10.8	60.1								
11	348	47.1		20.3	211	28.3	8.2	8	57.7	10.9	60.1								
12	3	47.2	S 10	21.2	225	55.5	8.3	S 8	46.8	11.0	60.1								
13	18	47.3		22.1	240	22.8	8.2	8	35.8	11.0	60.1	N 72	15 40	16 53	18 12	24 02	00 02	02 08	04 09
14	33	47.4		23.0	254	50.0	8.3	8	24.8	11.1	60.1	N 70	15 55	17 00	18 10	24 21	00 21	02 17	04 11
15	48	47.5		23.9	269	17.3	8.3	8	13.7	11.1	60.1	68	16 06	17 05	18 10	24 37	00 37	02 25	04 12
16	63	47.6		24.8	283	44.6	8.4	8	02.6	11.2	60.1	66	16 16	17 10	18 09	24 49	00 49	02 31	04 13
17	78	47.7		25.7	298	12.0	8.3	7	51.4	11.2	60.1	64	16 24	17 14	18 09	24 59	00 59	02 36	04 14
18	93	47.8	S 10	26.6	312	39.3	8.4	S 7	40.2	11.3	60.1	62	16 31	17 17	18 09	25 08	01 08	02 41	04 15
19	108	47.9		27.5	327	06.7	8.4	7	28.9	11.4	60.1	60	16 38	17 20	18 09	25 15	01 15	02 45	04 15
20	123	48.0		28.4	341	34.1	8.4	7	17.5	11.3	60.1	N 58	16 43	17 23	18 09	25 21	01 21	02 49	04 16
21	138	48.2		29.3	356	01.5	8.5	7	06.2	11.5	60.1	56	16 48	17 26	18 09	00 05	01 27	02 52	04 17
22	153	48.3		30.2	10	29.0	8.4	6	54.7	11.4	60.1	54	16 52	17 28	18 09	00 12	01 32	02 54	04 17
23	168	48.4		31.1	24	56.4	8.5	6	43.3	11.6	60.1	52	16 56	17 30	18 09	00 19	01 37	02 57	04 17
2100	183	48.5	S 10	32.0	39	23.9	8.6	S 6	31.7	11.5	60.1	50	16 59	17 32	18 09	00 24	01 41	02 59	04 18
01	198	48.6		32.9	53	51.5	8.5	6	20.2	11.6	60.1	45	17 07	17 37	18 11	00 37	01 50	03 04	04 19
02	213	48.7		33.8	68	19.0	8.5	6	08.6	11.7	60.1	N 40	17 14	17 41	18 13	00 47	01 57	03 08	04 19
03	228	48.8		34.7	82	46.5	8.6	5	56.9	11.6	60.1	35	17 19	17 45	18 14	00 56	02 04	03 12	04 20
04	243	48.9		35.6	97	14.1	8.6	5	45.3	11.7	60.2	30	17 24	17 49	18 16	01 04	02 09	03 15	04 21
05	258	49.0		36.5	111	41.7	8.6	5	33.6	11.8	60.2	20	17 33	17 55	18 21	01 17	02 19	03 20	04 21
06	273	49.1	S 10	37.3	126	09.3	8.7	S 5	21.8	11.8	60.2	N 10	17 41	18 02	18 27	01 29	02 27	03 25	04 22
07	288	49.2		38.2	140	37.0	8.6	5	10.0	11.8	60.2	0	17 48	18 09	18 34	01 40	02 35	03 29	04 23
08	303	49.3		39.1	155	04.6	8.7	4	58.2	11.8	60.2	S 10	17 56	18 17	18 42	01 50	02 43	03 34	04 23
09	318	49.4		40.0	169	32.3	8.7	4	46.4	11.9	60.2	20	18 04	18 26	18 53	02 02	02 51	03 38	04 24
10	333	49.5		40.9	184	00.0	8.7	4	34.5	11.9	60.2	30	18 13	18 38	19 07	02 15	03 00	03 43	04 25
11	348	49.6		41.8	198	27.7	8.8	4	22.6	12.0	60.1	35	18 19	18 45	19 16	02 22	03 05	03 46	04 25
12	3	49.7	S 10	42.7	212	55.5	8.7	S 4	10.6	11.9	60.1	40	18 25	18 53	19 27	02 30	03 11	03 49	04 25
13	18	49.8		43.6	227	23.2	8.8	3	58.7	12.0	60.1	45	18 32	19 03	19 41	02 40	03 18	03 53	04 26
14	33	49.9		44.5	241	51.0	8.7	3	46.7	12.0	60.1	S 50	18 41	19 16	19 58	02 52	03 26	03 58	04 27
15	48	50.0		45.4	256	18.7	8.8	3	34.7	12.0	60.1	52	18 45	19 22	20 07	02 57	03 30	04 00	04 27
16	63	50.1		46.2	270	46.5	8.9	3	22.7	12.1	60.1	54	18 50	19 28	20 17	03 03	03 34	04 02	04 27
17	78	50.2		47.1	285	14.4	8.8	3	10.6	12.0	60.1	56	18 55	19 36	20 28	03 10	03 39	04 04	04 27
18	93	50.3	S 10	48.0	299	42.2	8.8	S 2	58.6	12.1	60.1	58	19 00	19 44	20 41	03 17	03 44	04 07	04 28
19	108	50.4		48.9	314	10.0	8.9	2	46.5	12.1	60.1	S 60	19 07	19 54	20 57	03 26	03 50	04 10	04 28
20	123	50.5		49.8	328	37.9	8.9	2	34.4	12.1	60.1								
21	138																		

G.M.T.		ARIES		VENUS -3-4		MARS +1-8		JUPITER -1-9		SATURN +0-8		STARS		
		G.H.A.		G.H.A.	Dec.	G.H.A.	Dec.	G.H.A.	Dec.	G.H.A.	Dec.	Name	S.H.A.	Dec.
2200	d h													
	01	30 11.0	205 09.7 S	0 28.6	168 50.6 S	16 04.6	89 19.0 S	21 05.6	94 32.8 S	21 37.1	Acamar	315 47.6	S 40 27.4	
	02	45 13.5	220 09.3	2.98	183 51.4	05.2	104 21.2	05.5	109 35.1	37.1	Achernar	335 55.3	S 57 25.9	
	03	60 16.0	235 08.9	31.0	198 52.1	05.7	119 23.4	05.5	124 37.5	37.1	Acrux	173 53.6	S 62 53.0	
	04	75 18.4	250 08.5	.. 32.2	213 52.9	.. 06.3	134 25.7	.. 05.4	139 39.8	.. 37.1	Adhara	255 43.1	S 28 55.0	
SUNDAY	05	90 20.9	265 08.2	33.4	228 53.6	06.8	149 27.9	05.4	154 42.2	37.0	Aldebaran	291 34.0	N 16 26.0	
	06	105 23.4	280 07.8	34.6	243 54.4	07.4	164 30.1	05.3	169 44.6	37.0				
	07	120 25.8	295 07.4 S	0 35.8	258 55.1 S	16 07.9	179 32.4 S	21 05.3	184 46.9 S	21 37.0	Alioth	166 55.6	N 56 10.1	
	08	135 28.3	310 07.0	37.1	273 55.9	08.4	194 34.6	05.2	199 49.3	37.0	Alkaid	153 30.2	N 49 30.4	
	09	150 30.8	325 06.6	38.3	288 56.6	09.0	209 36.8	05.2	214 51.6	37.0	Al Na'ir	28 32.6	S 47 08.9	
MONDAY	10	165 33.2	340 06.2	.. 39.5	303 57.3	.. 09.5	224 39.1	.. 05.1	229 54.0	.. 37.0	Alnilam	276 25.9	S 1 13.5	
	11	180 35.7	355 05.8	40.7	318 58.1	10.1	239 41.3	05.1	244 56.4	37.0	Alphard	218 34.6	S 8 29.4	
	12	195 38.1	10 05.4	41.9	333 58.8	10.6	254 43.5	05.0	259 58.7	36.9				
	13	210 40.6	25 05.1 S	0 43.1	348 59.6 S	16 11.1	269 45.7 S	21 05.0	275 01.1 S	21 36.9	Alphecca	126 44.5	N 26 50.8	
	14	225 43.1	40 04.7	44.3	4 00.3	11.7	284 48.0	05.0	290 03.4	36.9	Alpheratz	358 23.7	N 28 52.9	
TUESDAY	15	240 45.5	55 04.3	45.5	19 01.1	12.2	299 50.2	04.9	305 05.8	36.9	Altair	62 46.4	N 8 46.2	
	16	255 48.0	70 03.9	.. 46.7	34 01.8	.. 12.8	314 52.4	.. 04.9	320 08.1	.. 36.9	Ankaa	353 53.9	S 42 30.9	
	17	270 50.5	85 03.5	48.0	49 02.5	13.3	329 54.6	04.8	335 10.5	36.9	Antares	113 14.5	S 26 20.8	
	18	285 52.9	100 03.1	49.2	64 03.3	13.8	344 56.9	04.8	350 12.8	36.8				
	19	300 55.4	115 02.7 S	0 50.4	79 04.0 S	16 14.4	359 59.1 S	21 04.7	5 15.2 S	21 36.8	Arcturus	146 31.8	N 19 23.1	
WEDNESDAY	20	315 57.9	130 02.3	51.6	94 04.8	14.9	15 01.3	04.7	20 17.6	36.8	Atria	108 51.9	S 68 57.6	
	21	331 00.3	145 02.0	52.8	109 05.5	15.5	30 03.6	04.6	35 19.9	36.8	Avior	234 34.0	S 59 22.9	
	22	346 02.8	160 01.6	.. 54.0	124 06.3	.. 16.0	45 05.8	.. 04.6	50 22.3	.. 36.8	Bellatrix	279 13.8	N 6 19.0	
	23	1 05.2	175 01.2	55.2	139 07.0	16.5	60 08.0	04.5	65 24.6	36.8	Betelgeuse	271 43.5	N 7 24.0	
	24	16 07.7	190 00.8	56.4	154 07.7	17.1	75 10.2	04.5	80 27.0	36.8				
THURSDAY	2300	31 10.2	205 00.4 S	0 57.6	169 08.5 S	16 17.6	90 12.5 S	21 04.4	95 29.3 S	21 36.7	Canopus	264 13.3	S 52 40.2	
	01	46 12.6	220 00.0	0 58.9	184 09.2	18.1	105 14.7	04.4	110 31.7	36.7	Capella	281 31.9	N 45 57.5	
	02	61 15.1	234 59.6	1 00.1	199 10.0	18.7	120 16.9	04.3	125 34.0	36.7	Deneb	49 58.0	N 45 08.9	
	03	76 17.6	249 59.2	.. 01.3	214 10.7	.. 19.2	135 19.1	.. 04.3	140 36.4	.. 36.7	Denebola	183 13.8	N 14 47.3	
	04	91 20.0	264 58.8	02.5	229 11.4	19.8	150 21.3	04.2	155 38.8	36.7	Diphda	349 34.8	S 18 11.8	
FRIDAY	05	106 22.5	279 58.5	03.7	244 12.2	20.3	165 23.6	04.2	170 41.1	36.7				
	06	121 25.0	294 58.1 S	1 04.9	259 12.9 S	16 20.8	180 25.8 S	21 04.1	185 43.5 S	21 36.6	Dubhe	194 40.1	N 61 57.3	
	07	136 27.4	309 57.7	06.1	274 13.7	21.4	195 28.0	04.1	200 45.8	36.6	Elnath	279 01.8	N 28 34.5	
	08	151 29.9	324 57.3	07.3	289 14.4	21.9	210 30.2	04.1	215 48.2	36.6	Eltanin	91 04.6	N 51 30.0	
	09	166 32.4	339 56.9	.. 08.5	304 15.1	.. 22.4	225 32.5	.. 04.0	230 50.5	.. 36.6	Enif	34 25.4	N 9 42.1	
SATURDAY	10	181 34.8	354 56.5	09.8	319 15.9	23.0	240 34.7	04.0	245 52.9	36.6	Fomalhaut	16 06.8	S 29 49.6	
	11	196 37.3	9 56.1	11.0	334 16.6	23.5	255 36.9	03.9	260 55.2	36.6				
	12	211 39.7	24 55.7 S	1 12.2	349 17.3 S	16 24.1	270 39.1 S	21 03.9	275 57.6 S	21 36.5	Gacrux	172 45.0	S 56 53.7	
	13	226 42.2	39 55.3	13.4	4 18.1	24.6	285 41.3	03.8	290 59.9	36.5	Gienah	176 32.9	S 17 19.5	
	14	241 44.7	54 54.9	14.6	19 18.8	25.1	300 43.6	03.8	306 02.3	36.5	Hadar	149 44.1	S 60 11.2	
SUNDAY	15	256 47.1	69 54.6	.. 15.8	34 19.6	.. 25.7	315 45.8	.. 03.7	321 04.6	.. 36.5	Hamal	328 44.6	N 23 16.9	
	16	271 49.6	84 54.2	17.0	49 20.3	26.2	330 48.0	03.7	336 07.0	36.5	Kaus Aust.	84 35.9	S 34 24.2	
	17	286 52.1	99 53.8	18.2	64 21.0	26.7	345 50.2	03.6	351 09.3	36.5				
	18	301 54.5	114 53.4 S	1 19.5	79 21.8 S	16 27.3	0 52.4 S	21 03.6	6 11.7 S	21 36.5	Kochab	137 19.5	N 74 18.9	
	19	316 57.0	129 53.0	20.7	94 22.5	27.8	15 54.7	03.5	21 14.0	36.4	Markab	14 17.1	N 15 00.1	
MONDAY	20	331 59.5	144 52.6	21.9	109 23.2	28.3	30 56.9	03.5	36 16.4	36.4	Menkar	314 55.7	N 3 56.4	
	21	347 01.9	159 52.2	.. 23.1	124 24.0	.. 28.9	45 59.1	.. 03.4	51 18.7	.. 36.4	Menkent	148 54.1	S 36 10.8	
	22	2 04.4	174 51.8	24.3	139 24.7	29.4	61 01.3	03.4	66 21.1	36.4	Miaplacidus	221 48.2	S 69 33.3	
	23	17 06.8	189 51.4	25.5	154 25.4	29.9	76 03.5	03.3	81 23.4	36.4				
	2400	32 09.3	204 51.0 S	1 26.7	169 26.2 S	16 30.5	91 05.8 S	21 03.3	96 25.8 S	21 36.4	Mirfak	309 35.9	N 49 43.5	
TUESDAY	01	47 11.8	219 50.6	27.9	184 26.9	31.0	106 08.0	03.2	111 28.1	36.3	Nunki	76 46.9	S 26 20.7	
	02	62 14.2	234 50.3	29.1	199 27.6	31.5	121 10.2	03.2	126 30.5	36.3	Peacock	54 20.8	S 56 51.7	
	03	77 16.7	249 49.9	.. 30.4	214 28.4	.. 32.1	136 12.4	.. 03.1	141 32.8	.. 36.3	Pollux	244 15.5	N 28 07.1	
	04	92 19.2	264 49.5	31.6	229 29.1	32.6	151 14.6	03.1	156 35.2	36.3	Procyon	245 40.6	N 5 19.5	
	05	107 21.6	279 49.1	32.8	244 29.8	33.1	166 16.8	03.0	171 37.5	36.3				
WEDNESDAY	06	122 24.1	294 48.7 S	1 34.0	259 30.6 S	16 33.7	181 19.1 S	21 03.0	186 39.9 S	21 36.3	Rasalhague	96 43.0	N 12 35.5	
	07	137 26.6	309 48.3	35.2	274 31.3	34.2	196 21.3	02.9	201 42.2	36.2	Regulus	208 25.3	N 12 09.3	
	08	152 29.0	324 47.9	36.4	289 32.0	34.7	211 23.5	02.9	216 44.6	36.2	Rigel	281 49.4	S 8 14.6	
	09	167 31.5	339 47.5	.. 37.6	304 32.8	.. 35.3	226 25.7	.. 02.8	231 46.9	.. 36.2	Rigel Kent.	140 45.8	S 60 40.5	
	10	182 34.0	354 47.1	38.8	319 33.5	35.8	241 27.9	02.8	246 49.3	36.2	Sabik	102 57.6	S 15 40.6	
THURSDAY	11	197 36.4	9 46.7	40.1	334 34.2	36.3	256 30.1	02.7	261 51.6	36.2				
	12	212 38.9	24 46.3 S	1 41.3	349 35.0 S	16 36.9	271 32.3 S	21 02.7	276 54.0 S	21 36.2	Schedar	350 24.6	N 56 19.8	
	13	227 41.3	39 45.9	42.5	4 35.7	37.4	286 34.6	02.6	291 56.3	36.1	Shaula	97 15.3	S 37 04.6	
	14	242 43.8	54 45.5	43.7	19 36.4	37.9	301 36.8	02.6	306 58.7	36.1	Sirius	259 08.1	S 16 39.6	
	15	257 46.3	69 45.2	.. 44.9	34 37.2	.. 38.5	316 39.0	.. 02.5	322 01.0	.. 36.1	Spica	159 12.8	S 10 57.5	
FRIDAY	16	272 48.7	84 44.8	46.1	49 37.9	39.0	331 41.2	02.5	337 03.4	36.1	Suhail	223 21.3	S 43 16.4	
	17	287 51.2	99 44.4	47.3	64 38.6	39.5	346 43.4	02.4	352 05.7	36.1				
	18	302 53.7	114 44.0 S	1 48.5	79 39.3 S	16 40.0	1 45.6 S	21 02.4	7 08.1 S	21 36.1	Vega	81 05.6	N 38 45.2	
	19	317 56.1	129 43.6	49.7	94 40.1	40.6	16 47.8	02.3	22 10.4	36.0	Zuben 'ubi	137 49.1	S 15 52.8	
	20	332 58.6	144 43.2	51.0	109 40.8	41.1	31 50.0	02.3	37 12.8	36.0				
SATURDAY	21	348 01.1	159 42.8	.. 52.2	124 41.5	.. 41.6	46 52.2	.. 02.2	52 15.1	.. 36.0				
	22	3 03.5	174 42.4	53.4	139 42.3	42.2	61 54.5	02.2	67 17.5	36.0	Venus	173 50.2	10 20	
	23	18 06.0	189 42.0	54.6	154 43.0	42.7	76 56.7	02.1	82 19.8	36.0	Mars	137 58.3	12 43	
											Jupiter	59 02.3	17 57	
											Saturn	64 19.1	17 35	
Mer. Pass. 21 51:7		v -0.4 d 1-2		v 0.7 d 0-5		v 2.2 d 0-0		v 2.4 d 0-0						

Mer. Pass. 21 51.7

v -0.4 d 1.2

v 0.7 d 0.5

v 2.2 d 0.0

v 2.4 d 0.0

v 2.4 d 0.0

v 2.4 d 0.0

v 2.4 d 0.0

v 2.4 d 0.0

v 2.4 d 0.0

v 2.4 d 0.0

G.M.T.	SUN				MOON				Lat.	Twilight		Sun-rise	Moonrise						
	G.H.A.		Dec.	H.P.	v	Dec.	d	Naut.		Civil	22		23	24	25				
	°	'														°	'	°	'
22 00	183	50.9	S 10	53.3	26	29.5	8.9	S	1 45.8	12.1	60.1	N 72	05 29	06 48	08 04	16 32	16 23	16 13	16 00
01	198	51.0		54.2	40	57.4	9.0		1 33.7	12.2	60.1	N 70	05 29	06 40	07 47	16 33	16 31	16 29	16 28
02	213	51.1		55.1	55	25.4	8.9		1 21.5	12.2	60.1	68	05 28	06 33	07 33	16 35	16 38	16 42	16 49
03	228	51.2	••	56.0	69	53.3	9.0		1 09.3	12.1	60.1	66	05 28	06 28	07 23	16 36	16 44	16 53	17 05
04	243	51.3		56.9	84	21.3	9.0		0 57.2	12.2	60.1	64	05 28	06 23	07 13	16 38	16 49	17 03	17 19
05	258	51.4		57.8	98	49.3	9.0		0 45.0	12.2	60.1	62	05 27	06 19	07 06	16 39	16 54	17 10	17 30
06												60	05 27	06 15	06 59	16 39	16 58	17 17	17 40
07	273	51.5	S 10	58.7	113	17.3	9.0	S	0 32.8	12.2	60.1	N 58	05 26	06 12	06 53	16 40	17 01	17 23	17 49
08	288	51.6	10	59.5	127	45.3	9.0		0 20.6	12.2	60.0	56	05 26	06 09	06 47	16 41	17 04	17 29	17 57
09	303	51.7	11	00.4	142	13.3	9.0	S	0 08.4	12.2	60.0	54	05 25	06 06	06 43	16 42	17 07	17 34	18 04
10	318	51.8	••	01.3	156	41.3	9.0	N	0 03.8	12.1	60.0	52	05 24	06 04	06 38	16 42	17 09	17 38	18 10
11	333	51.9		02.2	171	09.3	9.1		0 15.9	12.2	60.0	50	05 24	06 01	06 34	16 43	17 12	17 42	18 15
12	348	52.0		03.1	185	37.4	9.0		0 28.1	12.2	60.0	45	05 22	05 56	06 26	16 44	17 17	17 51	18 27
13	3 52.0	S 11		04.0	200	05.4	9.1	N	0 40.3	12.1	60.0	N 40	05 20	05 51	06 19	16 45	17 21	17 58	18 37
14	18 52.1			04.8	214	33.5	9.1		0 52.4	12.2	60.0	35	05 17	05 47	06 13	16 46	17 25	18 04	18 46
15	33 52.2			05.7	229	01.6	9.0		1 04.6	12.1	60.0	30	05 15	05 43	06 07	16 47	17 28	18 10	18 53
16	48 52.3	••		06.6	243	29.6	9.1		1 16.7	12.2	60.0	20	05 09	05 35	05 58	16 48	17 34	18 19	19 07
17	63 52.4			07.5	257	57.7	9.1		1 28.9	12.1	59.9	N 10	05 03	05 28	05 49	16 49	17 39	18 28	19 18
18	78 52.5			08.4	272	25.8	9.1		1 41.0	12.1	59.9	0	04 56	05 20	05 41	16 51	17 43	18 36	19 29
19	93 52.6	S 11		09.3	286	53.9	9.1	N	1 53.1	12.1	59.9	S 10	04 46	05 11	05 33	16 52	17 48	18 44	19 40
20	108 52.7			10.1	301	22.0	9.1		2 05.2	12.0	59.9	20	04 35	05 01	05 24	16 53	17 53	18 53	19 52
21	123 52.8			11.0	315	50.1	9.1		2 17.2	12.1	59.9	30	04 20	04 49	05 14	16 55	17 59	19 03	20 06
22	138 52.9	••		11.9	330	18.2	9.1		2 29.3	12.0	59.9	35	04 10	04 42	05 08	16 56	18 03	19 09	20 13
23	153 53.0			12.8	344	46.3	9.2		2 41.3	12.0	59.9	40	03 59	04 33	05 01	16 57	18 07	19 15	20 22
24	168 53.1			13.7	359	14.5	9.2		2 53.3	12.0	59.8	45	03 44	04 22	04 53	16 58	18 11	19 23	20 33
23 00	183	53.2	S 11	14.5	13	42.6	9.1	N	3 05.3	12.0	59.8	S 50	03 26	04 09	04 44	16 59	18 17	19 33	20 45
01	198	53.2		15.4	28	10.7	9.2		3 17.3	11.9	59.8	52	03 17	04 03	04 39	17 00	18 19	19 37	20 51
02	213	53.3		16.3	42	38.9	9.1		3 29.2	11.9	59.8	54	03 07	03 56	04 34	17 01	18 22	19 42	20 58
03	228	53.4	••	17.2	57	07.0	9.1		3 41.1	11.9	59.8	56	02 55	03 48	04 29	17 01	18 25	19 47	21 05
04	243	53.5		18.1	71	35.1	9.2		3 53.0	11.9	59.8	58	02 40	03 39	04 23	17 02	18 29	19 53	21 14
05	258	53.6		18.9	86	03.3	9.1		4 04.9	11.8	59.7	S 60	02 23	03 28	04 16	17 03	18 33	20 00	21 23
06	273	53.7	S 11	19.8	100	31.4	9.2	N	4 16.7	11.8	59.7	Lat.	Sun-set	Twilight	Moonset				
07	288	53.8		20.7	114	59.6	9.1		4 28.5	11.7	59.7				22	23	24	25	
08	303	53.9		21.6	129	27.7	9.2		4 40.2	11.8	59.7				h m	h m	h m	h m	
09	318	54.0	••	22.4	143	55.9	9.1		4 52.0	11.6	59.7				h m	h m	h m	h m	
10	333	54.0		23.3	158	24.0	9.2		5 03.6	11.7	59.7				h m	h m	h m	h m	
11	348	54.1		24.2	172	52.2	9.2		5 15.3	11.6	59.6	N 72	15 23	16 39	17 58	04 09	06 10	08 10	10 14
12	3 54.2	S 11		25.1	187	20.4	9.1	N	5 26.9	11.6	59.6	N 70	15 40	16 47	17 58	04 11	06 04	07 56	09 48
13	18 54.3			26.0	201	48.5	9.2		5 38.5	11.5	59.6	68	15 54	16 54	17 59	04 12	05 59	07 44	09 28
14	33 54.4			26.8	216	16.7	9.1		5 50.0	11.5	59.6	66	16 05	17 00	17 59	04 13	05 55	07 35	09 12
15	48 54.5	••		27.7	230	44.8	9.2		6 01.5	11.4	59.6	64	16 14	17 04	18 00	04 14	05 51	07 27	09 00
16	63 54.6			28.6	245	13.0	9.1		6 12.9	11.4	59.5	62	16 22	17 09	18 00	04 15	05 48	07 20	08 49
17	78 54.7			29.5	259	41.1	9.2		6 24.3	11.4	59.5	60	16 29	17 12	18 01	04 15	05 46	07 14	08 40
18	93 54.7	S 11		30.3	274	09.3	9.2	N	6 35.7	11.3	59.5	N 58	16 35	17 16	18 01	04 16	05 43	07 09	08 32
19	108 54.8			31.2	288	37.5	9.1		6 47.0	11.3	59.5	56	16 41	17 19	18 02	04 17	05 41	07 04	08 24
20	123 54.9			32.1	303	05.6	9.2		6 58.3	11.2	59.4	54	16 45	17 22	18 03	04 17	05 39	07 00	08 18
21	138 55.0	••		33.0	317	33.8	9.1		7 09.5	11.1	59.4	52	16 50	17 24	18 04	04 17	05 38	06 56	08 13
22	153 55.1			33.8	332	01.9	9.2		7 20.6	11.2	59.4	50	16 54	17 27	18 04	04 18	05 36	06 53	08 08
23	168 55.2			34.7	346	30.1	9.1		7 31.8	11.0	59.4	45	17 02	17 32	18 06	04 19	05 33	06 46	07 57
24 00	183	55.2	S 11	35.6	0 58.2	9.2	N	7 42.8	11.0	59.4	N 40	17 10	17 37	18 09	04 19	05 30	06 40	07 48	
01	198	55.3		36.5	15 26.4	9.1		7 53.8	11.0	59.3	35	17 16	17 42	18 11	04 20	05 28	06 34	07 40	
02	213	55.4		37.3	29 54.5	9.2		8 04.8	10.8	59.3	30	17 21	17 46	18 14	04 21	05 26	06 30	07 33	
03	228	55.5	••	38.2	44 22.7	9.1		8 15.6	10.9	59.3	20	17 31	17 53	18 19	04 21	05 22	06 22	07 22	
04	243	55.6		39.1	58 50.8	9.1		8 26.5	10.8	59.3	N 10	17 40	18 01	18 26	04 22	05 19	06 15	07 11	
05	258	55.7		39.9	73 18.9	9.2		8 37.3	10.7	59.2	0	17 48	18 09	18 33	04 23	05 16	06 09	07 02	
06	273	55.7	S 11	40.8	87 47.1	9.1	N	8 48.0	10.6	59.2	S 10	17 56	18 18	18 43	04 23	05 13	06 02	06 52	
07	288	55.8		41.7	102 15.2	9.1		8 58.6	10.6	59.2	20	18 05	18 28	18 54	04 24	05 09	05 55	06 42	
08	303	55.9		42.5	116 43.3	9.2		9 09.2	10.5	59.2	30	18 15	18 40	19 09	04 25	05 06	05 47	06 30	
09	318	56.0	••	43.4	131 11.5	9.1		9 19.7	10.5	59.1	35	18 21	18 48	19 19	04 25	05 04	05 43	06 23	
10	333	56.1		44.3	145 39														

		ARIES		VENUS -3.4		MARS +1.7		JUPITER -1.9		SATURN +0.8		STARS			
G.M.T.		G.H.A.		G.H.A. Dec.		G.H.A. Dec.		G.H.A. Dec.		G.H.A. Dec.		Name		S.H.A. Dec.	
25	00	33 08.4	204 41.6 S	1 55.8	169 43.7 S	16 43.2	91 58.9 S	21 02.1	97 22.2 S	21 36.0	Acamar	315 47.6	S 40 27.4		
	01	48 10.9	219 41.2	57.0	184 44.4	43.7	107 01.1	02.0	112 24.5	35.9	Achernar	335 55.3	S 57 25.9		
	02	63 13.4	234 40.8	58.2	199 45.2	44.3	122 03.3	02.0	127 26.9	35.9	Acrux	173 53.6	S 62 53.0		
	03	78 15.8	249 40.4	1 59.4	214 45.9	.. 44.8	137 05.5	.. 01.9	142 29.2	.. 35.9	Adhara	255 43.1	S 28 55.0		
	04	93 18.3	264 40.0	2 00.7	229 46.6	45.3	152 07.7	01.9	157 31.5	35.9	Aldebaran	291 34.0	N 16 26.0		
WEDNESDAY	05	108 20.8	279 39.7	01.9	244 47.3	45.8	167 09.9	01.8	172 33.9	35.9					
	06	123 23.2	294 39.3 S	2 03.1	259 48.1 S	16 46.4	182 12.1 S	21 01.8	187 36.2 S	21 35.9	Alioth	166 55.5	N 56 10.1		
	07	138 25.7	309 38.9	04.3	274 48.8	46.9	197 14.3	01.7	202 38.6	35.8	Alkaid	153 30.2	N 49 30.4		
	08	153 28.2	324 38.5	05.5	289 49.5	47.4	212 16.5	01.7	217 40.9	35.8	Al Na'ir	28 32.6	S 47 08.8		
	09	168 30.6	339 38.1	.. 06.7	304 50.3	.. 48.0	227 18.8	.. 01.6	232 43.3	.. 35.8	Alnilam	276 25.8	S 1 13.3		
THURSDAY	10	183 33.1	354 37.7	.. 07.9	319 51.0	48.5	242 21.0	01.6	247 45.6	35.8	Alphard	218 34.6	S 8 29.4		
	11	198 35.6	9 37.3	09.4	334 51.7	49.0	257 23.2	01.5	262 48.0	35.8					
	12	213 38.0	24 36.9 S	2 10.1	349 52.4 S	16 49.5	272 25.4 S	21 01.5	277 50.3 S	21 35.7	Alphecca	126 44.5	N 26 50.8		
	13	228 40.5	39 36.5	11.6	4 53.2	50.1	287 27.6	01.4	292 52.7	35.7	Alpheratz	358 23.7	N 28 52.9		
	14	243 42.9	54 36.1	12.8	19 53.9	50.6	302 29.8	01.4	307 55.0	35.7	Altair	62 46.4	N 8 46.2		
FRIDAY	15	258 45.4	69 35.7	.. 14.0	34 54.6	.. 51.1	317 32.0	.. 01.3	322 57.3	.. 35.7	Ankaa	353 53.9	S 42 30.9		
	16	273 47.9	84 35.3	15.2	49 55.3	51.6	332 34.2	01.2	337 59.7	35.7	Antares	113 14.6	S 26 20.8		
	17	288 50.3	99 34.9	16.4	64 56.0	52.2	347 36.4	01.2	353 02.0	35.7					
	18	303 52.8	114 34.5 S	2 17.6	79 56.8 S	16 52.7	2 38.6 S	21 01.1	8 04.4 S	21 35.6	Arcturus	146 31.8	N 19 23.1		
	19	318 55.3	129 34.1	18.8	94 57.5	53.2	17 40.8	01.1	23 06.7	35.6	Atria	108 51.9	S 68 57.6		
SATURDAY	20	333 57.7	144 33.7	20.0	109 58.2	53.7	32 43.0	01.0	38 09.1	35.6	Avior	234 34.0	S 59 22.9		
	21	349 00.2	159 33.3	.. 21.3	124 58.9	.. 54.3	47 45.2	.. 01.0	53 11.4	.. 35.6	Bellatrix	279 13.7	N 6 19.0		
	22	4 02.7	174 32.9	22.5	139 59.7	54.8	62 47.4	00.9	68 13.7	35.6	Betelgeuse	271 43.4	N 7 24.0		
	23	19 05.1	189 32.5	23.7	155 00.4	55.3	77 49.6	00.9	83 16.1	35.6					
	24	34 07.6	204 32.1 S	2 24.9	170 01.1 S	16 55.8	92 51.8 S	21 00.8	98 18.4 S	21 35.5	Canopus	264 13.3	S 52 40.3		
SUNDAY	01	49 10.1	219 31.7	26.1	185 01.8	56.4	107 54.0	00.8	113 20.8	35.5	Capella	281 31.9	N 45 57.5		
	02	64 12.5	234 31.3	27.3	200 02.5	56.9	122 56.2	00.7	128 23.1	35.5	Deneb	49 58.1	N 45 08.9		
	03	79 15.0	249 31.0	.. 28.5	215 03.3	.. 57.4	137 58.4	.. 00.7	143 25.5	.. 35.5	Denebola	183 13.8	N 14 47.3		
	04	94 17.4	264 30.6	29.7	230 04.0	57.9	153 00.6	00.6	158 27.8	35.5	Diphda	349 34.8	S 18 11.8		
	05	109 19.9	279 30.2	30.9	245 04.7	58.4	168 02.8	00.6	173 30.1	35.4					
MONDAY	06	124 22.4	294 29.8 S	2 32.2	260 05.4 S	16 59.0	183 05.0 S	21 00.5	188 32.5 S	21 35.4	Dubhe	194 40.1	N 61 57.3		
	07	139 24.8	309 29.4	33.4	275 06.1	16 59.5	198 07.2	00.5	203 34.8	35.4	Elmath	279 01.8	N 28 34.5		
	08	154 27.3	324 29.0	34.6	290 06.9	17 00.0	213 09.4	00.4	218 37.2	35.4	Eltanin	91 04.6	N 51 30.0		
	09	169 29.8	339 28.6	.. 35.8	305 07.6	.. 00.5	228 11.6	.. 00.4	233 39.5	.. 35.4	Enif	34 25.4	N 9 42.2		
	10	184 32.2	354 28.2	37.0	320 08.3	01.1	243 13.8	00.3	248 41.9	35.4	Fomalhaut	16 06.9	S 29 49.6		
TUESDAY	11	199 34.7	9 27.8	38.2	335 09.0	01.6	258 16.0	00.2	263 44.2	35.3					
	12	214 37.2	24 27.4 S	2 39.4	350 09.7 S	17 02.1	273 18.2 S	21 00.2	278 46.5 S	21 35.3	Gacrux	172 45.0	S 56 53.7		
	13	229 39.6	39 27.0	40.6	5 10.5	02.6	288 20.4	00.1	293 48.9	35.3	Gienah	176 32.8	S 17 19.5		
	14	244 42.1	54 26.6	41.8	20 11.2	03.1	303 22.6	00.1	308 51.2	35.3	Hadar	149 44.1	S 60 11.2		
	15	259 44.6	69 26.2	.. 43.1	35 11.9	.. 03.7	318 24.8	.. 00.0	323 53.6	.. 35.3	Hamal	328 44.6	N 23 16.9		
WEDNESDAY	16	274 47.0	84 25.8	44.3	50 12.6	04.2	333 27.0	21 00.0	338 55.9	35.2	Kaus Aust.	84 35.9	S 34 24.2		
	17	289 49.5	99 25.4	45.5	65 13.3	04.7	348 29.2	20 59.9	353 58.2	35.2					
	18	304 51.9	114 25.0 S	2 46.7	80 14.0 S	17 05.2	3 31.4 S	20 59.9	9 00.6 S	21 35.2	Kochab	137 19.5	N 74 18.9		
	19	319 54.4	129 24.6	47.9	95 14.8	05.7	18 33.6	59.8	24 02.9	35.2	Markab	14 17.1	N 15 00.1		
	20	334 56.9	144 24.2	49.1	110 15.5	06.2	33 35.8	59.8	39 05.3	35.2	Menkar	314 55.7	N 3 56.4		
THURSDAY	21	349 59.3	159 23.8	.. 50.3	125 16.2	.. 06.8	48 38.0	.. 59.7	54 07.6	.. 35.2	Menkent	148 54.1	S 36 10.7		
	22	5 01.8	174 23.4	51.5	140 16.9	07.3	63 40.2	59.7	69 09.9	35.1	Miaplacidus	221 48.2	S 69 33.3		
	23	20 04.3	189 23.0	52.8	155 17.6	07.8	78 42.4	59.6	84 12.3	35.1					
	24	35 06.7	204 22.6 S	2 54.0	170 18.3 S	17 08.3	93 44.6 S	20 59.6	99 14.6 S	21 35.1	Mirfak	309 35.9	N 49 43.5		
	01	50 09.2	219 22.2	55.2	185 19.1	08.8	108 46.8	59.5	114 16.9	35.1	Nunki	76 46.9	S 26 20.7		
FRIDAY	02	65 11.7	234 21.8	56.4	200 19.8	09.4	123 49.0	59.4	129 19.3	35.1	Peacock	54 20.8	S 56 51.7		
	03	80 14.1	249 21.4	.. 57.6	215 20.5	.. 09.9	138 51.2	.. 59.4	144 21.6	.. 35.0	Pollux	244 15.5	N 28 07.1		
	04	95 16.6	264 21.0	2 58.8	230 21.2	10.4	153 53.4	59.3	159 24.0	35.0	Procyon	245 40.6	N 5 19.5		
	05	110 19.0	279 20.6	3 00.0	245 21.9	10.9	168 55.6	59.3	174 26.3	35.0					
	06	125 21.5	294 20.2 S	3 01.2	260 22.6 S	17 11.4	183 57.8 S	20 59.2	189 28.6 S	21 35.0	Rasalhague	96 43.0	N 12 35.5		
SATURDAY	07	140 24.0	309 19.8	02.4	275 23.3	11.9	199 00.0	59.2	204 31.0	35.0	Regulus	208 25.3	N 12 09.3		
	08	155 26.4	324 19.4	03.6	290 24.1	12.5	214 02.2	59.1	219 33.3	35.0	Rigel	281 49.4	S 8 14.6		
	09	170 28.9	339 19.0	.. 04.9	305 24.8	.. 13.0	229 04.4	.. 59.1	234 35.6	.. 34.9	Rigel Kent.	140 45.8	S 60 40.5		
	10	185 31.4	354 18.6	06.1	320 25.5	13.5	244 06.5	59.0	249 38.0	34.9	Sabik	102 57.7	S 15 40.6		
	11	200 33.8	9 18.2	07.3	335 26.2	14.0	259 08.7	59.0	264 40.3	34.9					
SUNDAY	12	215 36.3	24 17.8 S	3 08.5	350 26.9 S	17 14.5	274 10.9 S	20 58.9	279 42.7 S	21 34.9	Schedar	350 24.6	N 56 19.8		
	13	230 38.8	39 17.4	09.7	5 27.6	15.0	289 13.1	58.8	294 45.0	34.9	Shaula	97 15.3	S 37 04.6		
	14	245 41.2	54 17.0	10.9	20 28.3	15.6	304 15.3	58.8	309 47.3	34.8	Sirius	259 08.1	S 16 39.7		
	15	260 43.7	69 16.6	.. 12.1	35 29.0	.. 16.1	319 17.5	.. 58.7	324 49.7	.. 34.8	Spica	159 12.8	S 10 57.5		
	16	275 46.2	84 16.2	13.3	50 29.8	16.6	334 19.7	58.7	339 52.0	34.8	Suhail	223 21.3	S 43 16.4		
MONDAY	17	290 48.6	99 15.8	14.5	65 30.5	17.1	349 21.9	58.6	354 54.3	34.8					
	18	305 51.1	114 15.4 S	3 15.7	80 31.2 S	17 17.6	4 24.1 S	20 58.6	9 56.7 S	21 34.8	Vega	81 05.6	N 38 45.2		
	19	320 53.5	129 15.0	17.0	95 31.9	18.1	19 26.3	58.5	24 59.0	34.7	Zuben 'ubi	137 49.1	S 15 52.8		
	20	335 56.0	144 14.6	18.2	110 32.6	18.6	34 28.5	58.5	40 01.3	34.7					
	21	350 58.5	159 14.2	.. 19.4	125 33.3	.. 19.2	49 30.6	.. 58.4	55 03.7	.. 34.7					
TUESDAY	22	6 00.9	174 13.8	20.6	140 34.0	19.7	64 32.8	58.3	70 06.0	34.7					
	23	21 03.4	189 13.4	21.8	155 34.7	20.2	79 35.0	58.3	85 08.4	34.7					
	24														
Mer. Pass. 21 39.9		h m v -0.4 d 1.2		v 0.7 d 0.5		v 2.2 d 0.1		v 2.3 d 0.0				S.H.A. Mer. Pass. h m			
												Venus 170 24.5 10 22			
												Mars 135 53.5 12 39			
												Jupiter 58 44.2 17 46			
												Saturn 64 10.8 17 24			

G.M.T.		SUN		MOON				Lat.	Twilight		Sun-rise	Moonrise									
		G.H.A.	Dec.	G.H.A.	<i>v</i>	Dec.	<i>d</i>		H.P.	Naut.		Civil	25	26	27	28					
d	h	°	'	°	'	°	'	°	'	°	'	h	m	h	m	h	m	h	m		
25	00	183	57.2	S 11	56.4	348	13.0	9.0	N 11	49.4	9.4	58.7	N 72	05 41	07 01	08 20	16 00	15 40	□	□	
	01	198	57.2		57.3	2	41.0	9.1	11	58.8	9.3	58.7	60	05 40	06 52	08 01	16 28	16 28	16 32	16 53	
	02	213	57.3		58.2	17	09.1	9.1	12	08.1	9.2	58.6	66	05 37	06 37	07 33	17 05	17 22	17 49	18 29	
	03	228	57.4	..	59.0	31	37.2	9.0	12	17.3	9.2	58.6	64	05 36	06 32	07 23	17 19	17 41	18 11	18 54	
	04	243	57.5	11	59.9	46	05.2	9.1	12	26.5	9.1	58.6	62	05 35	06 27	07 14	17 30	17 56	18 30	19 13	
WEDNESDAY	05	258	57.6	12	00.7	60	33.3	9.1	12	35.6	8.9	58.6	60	05 34	06 22	07 06	17 40	18 09	18 45	19 29	
	06	273	57.6	S 12	01.6	75	01.4	9.0	N 12	44.5	8.9	58.5	N 58	05 33	06 18	07 00	17 49	18 20	18 58	19 43	
	07	288	57.7		02.5	89	29.4	9.1	12	53.4	8.8	58.5	56	05 31	06 15	06 54	17 57	18 29	19 09	19 55	
	08	303	57.8		03.3	103	57.5	9.0	13	02.2	8.8	58.5	54	05 30	06 12	06 48	18 04	18 38	19 18	20 05	
	09	318	57.8	..	04.2	118	25.5	9.1	13	11.0	8.6	58.4	52	05 29	06 09	06 44	18 10	18 46	19 27	20 14	
THURSDAY	10	333	57.9		05.1	132	53.6	9.0	13	19.6	8.6	58.4	50	05 28	06 06	06 39	18 15	18 53	19 35	20 22	
	11	348	58.0		05.9	147	21.6	9.1	13	28.2	8.4	58.4	45	05 25	06 00	06 30	18 27	19 07	19 52	20 40	
	12	3	58.1	S 12	06.8	161	49.7	9.0	N 13	36.6	8.4	58.3	N 40	05 23	05 54	06 22	18 37	19 20	20 05	20 54	
	13	18	58.1		07.6	176	17.7	9.1	13	45.0	8.3	58.3	35	05 20	05 49	06 15	18 46	19 30	20 17	21 06	
	14	33	58.2		08.5	190	45.8	9.0	13	53.3	8.2	58.3	30	05 17	05 45	06 09	18 53	19 39	20 27	21 17	
FRIDAY	15	48	58.3	..	09.4	205	13.9	9.1	14	01.5	8.1	58.2	20	05 10	05 36	05 59	19 07	19 55	20 45	21 35	
	16	63	58.4		10.2	219	41.9	9.0	14	09.6	8.0	58.2	N 10	05 03	05 28	05 49	19 18	20 09	21 00	21 51	
	17	78	58.4		11.1	234	09.9	9.1	14	17.6	8.0	58.2	0	04 55	05 19	05 41	19 29	20 22	21 15	22 06	
	18	93	58.5	S 12	11.9	248	38.0	9.0	N 14	25.6	7.8	58.1	S 10	04 45	05 10	05 32	19 40	20 35	21 29	22 21	
	19	108	58.6		12.8	263	06.0	9.1	14	33.4	7.7	58.1	20	04 33	04 59	05 22	19 52	20 49	21 45	22 37	
SATURDAY	20	123	58.6		13.7	277	34.1	9.0	14	41.1	7.7	58.1	30	04 17	04 46	05 11	20 06	21 05	22 02	22 55	
	21	138	58.7	..	14.5	292	02.1	9.1	14	48.8	7.5	58.0	35	04 06	04 38	05 04	20 13	21 15	22 12	23 06	
	22	153	58.8		15.4	306	30.2	9.0	14	56.3	7.5	58.0	40	03 54	04 29	04 57	20 22	21 25	22 24	23 18	
	23	168	58.8		16.2	320	58.2	9.1	15	03.8	7.4	58.0	45	03 39	04 17	04 48	20 33	21 38	22 38	23 32	
	24	183	58.9	S 12	17.1	335	26.3	9.0	N 15	11.2	7.2	57.9	S 50	03 19	04 03	04 38	20 45	21 54	22 56	23 50	
SUNDAY	01	198	59.0		18.0	349	54.3	9.1	15	18.4	7.2	57.9	52	03 09	03 56	04 33	20 51	22 01	23 04	23 58	
	02	213	59.0		18.8	4	22.4	9.1	15	25.6	7.1	57.9	54	02 58	03 49	04 28	20 58	22 09	23 13	24 07	
	03	228	59.1	..	19.7	18	50.5	9.0	15	32.7	7.0	57.8	56	02 45	03 40	04 22	21 05	22 18	23 23	24 18	
	04	243	59.2		20.5	33	18.5	9.1	15	39.7	6.9	57.8	58	02 29	03 30	04 15	21 14	22 28	23 34	24 30	
	05	258	59.3		21.4	47	46.6	9.1	15	46.6	6.7	57.8	S 60	02 10	03 18	04 07	21 23	22 40	23 48	24 44	
MONDAY	06	273	59.3	S 12	22.2	62	14.7	9.1	N 15	53.3	6.7	57.7									
	07	288	59.4		23.1	76	42.8	9.0	16	00.0	6.6	57.7	Lat.	Sun-set	Twilight	Moonset					
	08	303	59.5		23.9	91	10.8	9.1	16	06.6	6.5	57.7			Civil	Naut.	25	26	27	28	
	09	318	59.5	..	24.8	105	38.9	9.1	16	13.1	6.4	57.6	°	h	m	h	m	h	m	h	m
	10	333	59.6		25.7	120	07.0	9.1	16	19.5	6.3	57.6	N 72	15 06	16 25	17 45	10 14	12 26	□	□	
TUESDAY	11	348	59.6		26.5	134	35.1	9.1	16	25.8	6.2	57.6	N 70	15 26	16 35	17 47	09 48	11 38	13 23	14 51	
	12	3	59.7	S 12	27.4	149	03.2	9.1	N 16	32.0	6.0	57.5	68	15 41	16 43	17 48	09 28	11 07	12 38	13 50	
	13	18	59.8		28.2	163	31.3	9.2	16	38.0	6.0	57.5	66	15 54	16 49	17 49	09 12	10 45	12 08	13 15	
	14	33	59.8		29.1	177	59.5	9.1	16	44.0	5.9	57.5	64	16 04	16 55	17 51	09 00	10 27	11 45	12 51	
	15	48	59.9	..	29.9	192	27.6	9.1	16	49.9	5.8	57.4	62	16 13	17 00	17 52	08 49	10 12	11 27	12 31	
WEDNESDAY	16	64	00.0		30.8	206	55.7	9.2	16	55.7	5.7	57.4	60	16 21	17 05	17 53	08 40	10 00	11 13	12 15	
	17	79	00.0		31.6	221	23.9	9.1	17	01.4	5.5	57.4	N 58	16 28	17 09	17 55	08 32	09 50	11 00	12 01	
	18	94	00.1	S 12	32.5	235	52.0	9.2	N 17	06.9	5.5	57.3	56	16 33	17 12	17 56	08 24	09 40	10 49	11 50	
	19	109	00.2		33.3	250	20.2	9.2	17	12.4	5.4	57.3	54	16 39	17 15	17 57	08 18	09 32	10 40	11 39	
	20	124	00.2		34.2	264	48.4	9.1	17	17.8	5.3	57.3	52	16 44	17 19	17 58	08 13	09 25	10 31	11 30	
THURSDAY	21	139	00.3	..	35.0	279	16.5	9.2	17	23.1	5.1	57.2	50	16 48	17 21	17 59	08 08	09 18	10 24	11 22	
	22	154	00.3		35.9	293	44.7	9.2	17	28.2	5.1	57.2	45	16 58	17 28	18 02	07 57	09 04	10 07	11 05	
	23	169	00.4		36.7	308	12.9	9.3	17	33.3	4.9	57.2	N 40	17 06	17 33	18 05	07 48	08 53	09 54	10 50	
	24	184	00.5	S 12	37.6	322	41.2	9.2	N 17	38.2	4.9	57.1	35	17 12	17 38	18 08	07 40	08 43	09 43	10 38	
	25	199	00.5		38.4	337	09.4	9.2	17	43.1	4.7	57.1	30	17 18	17 43	18 11	07 33	08 35	09 33	10 28	
FRIDAY	01	214	00.6		39.3	351	37.6	9.3	17	47.8	4.7	57.1	20	17 29	17 51	18 18	07 22	08 20	09 16	10 10	
	02	229	00.6	..	40.1	6	05.9	9.3	17	52.5	4.5	57.0	N 10	17 39	18 00	18 25	07 11	08 07	09 01	09 54	
	03	244	00.7		41.0	20	34.2	9.2	17	57.0	4.4	57.0	0	17 47	18 09	18 33	07 02	07 55	08 47	09 39	
	04	259	00.8		41.8	35	02.4	9.3	18	01.4	4.4	57.0	S 10	17 57	18 18	18 43	06 52	07 42	08 33	09 25	
	05	274	00.8	S 12	42.7	49	30.7	9.4	N 18	05.8	4.2	56.9	20	18 06	18 29	18 56	06 42	07 29	08 19	09 09	
SATURDAY	06	289	00.9		43.5	63	59.1	9.3	18	10.0	4.1	56.9	30	18 18	18 43	19 12	06 30	07 15	08 02	08 51	
	07	304	00.9		44.4	78	27.4	9.3	18	14.1	4.0	56.9	35	18 24	18 51	19 22	06 23	07 06	07 52	08 40	
	08	319	01.0	..	45.2	92	55.7	9.4	18	18.1	3.9	56.8	40	18 32	19 00						

G.M.T.	ARIES		VENUS -3.4		MARS +1.7		JUPITER -1.9		SATURN +0.8		STARS		
	G.H.A.		G.H.A.	Dec.	G.H.A.	Dec.	G.H.A.	Dec.	G.H.A.	Dec.	Name	S.H.A.	Dec.
28 ^{d h}													
00	36 05.9		204 12.9 S	3 23.0	170 35.4 S	17 20.7	94 37.2 S	20 58.2	100 10.7 S	21 34.7	Acamar	315 47.6 S	40 27.4
01	51 08.3		219 12.5	24.2	185 36.1	21.2	109 39.4	58.2	115 13.0	34.6	Achernar	335 55.3 S	57 25.9
02	66 10.8		234 12.1	25.4	200 36.9	21.7	124 41.6	58.1	130 15.4	34.6	Acrux	173 53.6 S	62 53.0
03	81 13.3		249 11.7	26.6	215 37.6	22.2	139 43.8	58.1	145 17.7	34.6	Adhara	255 43.1 S	28 55.0
04	96 15.7		264 11.3	27.8	230 38.3	22.7	154 46.0	58.0	160 20.0	34.6	Aldebaran	291 34.0 N	16 26.0
05	111 18.2		279 10.9	29.1	245 39.0	23.3	169 48.2	58.0	175 22.4	34.6			
06	126 20.7		294 10.5 S	3 30.3	260 39.7 S	17 23.8	184 50.3 S	20 57.9	190 24.7 S	21 34.5	Alioth	166 55.5 N	56 10.1
07	141 23.1		309 10.1	31.5	275 40.4	24.3	199 52.5	57.8	205 27.0	34.5	Alkaid	153 30.2 N	49 30.3
08	156 25.6		324 9.7	32.7	290 41.1	24.8	214 54.7	57.8	220 29.4	34.5	Al Na'ir	28 32.6 S	47 09.0
09	171 28.0		339 9.3	33.9	305 41.8	25.3	229 56.9	57.7	235 31.7	34.5	Alnilam	276 25.8 S	1 13.5
10	186 30.5		354 8.9	35.1	320 42.5	25.8	244 59.1	57.7	250 34.0	34.5	Alphard	218 34.6 S	8 29.4
11	201 33.0		9 08.5	36.3	335 43.2	26.3	260 01.3	57.6	265 36.4	34.4			
12	216 35.4		24 08.1 S	3 37.5	350 43.9 S	17 26.8	275 03.5 S	20 57.6	280 38.7 S	21 34.4	Alphecca	126 44.5 N	26 50.8
13	231 37.9		39 07.7	38.7	5 44.6	27.3	290 05.6	57.5	295 41.0	34.4	Alpheratz	358 23.7 N	28 52.9
14	246 40.4		54 07.3	39.9	20 45.3	27.8	305 07.8	57.5	310 43.4	34.4	Altair	62 46.4 N	8 46.2
15	261 42.8		69 06.9	41.1	35 46.0	28.4	320 10.0	57.4	325 45.7	34.4	Ankaa	353 53.9 S	42 30.9
16	276 45.3		84 06.5	42.3	50 46.7	28.9	335 12.2	57.3	340 48.0	34.3	Antares	113 14.6 S	26 20.8
17	291 47.8		99 06.1	43.5	65 47.5	29.4	350 14.4	57.3	355 50.3	34.3			
18	306 50.2		114 05.7 S	3 44.8	80 48.2 S	17 29.9	5 16.6 S	20 57.2	10 52.7 S	21 34.3	Arcturus	146 31.8 N	19 23.1
19	321 52.7		129 05.3	46.0	95 48.9	30.4	20 18.7	57.2	25 55.0	34.3	Atria	108 51.9 S	68 57.6
20	336 55.1		144 04.9	47.2	110 49.6	30.9	35 20.9	57.1	40 57.3	34.3	Avior	234 33.9 S	59 22.9
21	351 57.6		159 04.4	48.4	125 50.3	31.4	50 23.1	57.1	55 59.7	34.2	Bellatrix	279 13.7 N	6 19.0
22	7 00.1		174 04.0	49.6	140 51.0	31.9	65 25.3	57.0	71 02.0	34.2	Betelgeuse	271 43.4 N	7 24.0
23	22 02.5		189 03.6	50.8	155 51.7	32.4	80 27.5	56.9	86 04.3	34.2			
29													
00	37 05.0		204 03.2 S	3 52.0	170 52.4 S	17 32.9	95 29.7 S	20 56.9	101 06.7 S	21 34.2	Canopus	264 13.2 S	52 40.3
01	52 07.5		219 02.8	53.2	185 53.1	33.4	110 31.8	56.8	116 09.0	34.2	Capella	281 31.9 N	45 57.5
02	67 09.9		234 02.4	54.4	200 53.8	33.9	125 34.0	56.8	131 11.3	34.2	Deneb	49 58.1 N	45 08.9
03	82 12.4		249 02.0	55.6	215 54.5	34.4	140 36.2	56.7	146 13.7	34.1	Denebola	183 13.8 N	14 47.3
04	97 14.9		264 01.6	56.8	230 55.2	35.0	155 38.4	56.7	161 16.0	34.1	Diphda	349 34.8 S	18 11.8
05	112 17.3		279 01.2	58.0	245 55.9	35.5	170 40.6	56.6	176 18.3	34.1			
06	127 19.8		294 00.8 S	3 59.2	260 56.6 S	17 36.0	185 42.7 S	20 56.5	191 20.6 S	21 34.1	Dubhe	194 40.0 N	61 57.3
07	142 22.3		309 00.4	4 00.4	275 57.3	36.5	200 44.9	56.5	206 23.0	34.1	Elnath	279 01.8 N	28 34.5
08	157 24.7		324 00.0	01.7	290 58.0	37.0	215 47.1	56.4	221 25.3	34.0	Eltanin	91 04.7 N	51 30.0
09	172 27.2		338 59.5	02.9	305 58.7	37.5	230 49.3	56.4	236 27.6	34.0	Enif	34 25.4 N	9 42.1
10	187 29.6		353 59.1	04.1	320 59.4	38.0	245 51.5	56.3	251 30.0	34.0	Fomalhaut	16 06.9 S	29 49.6
11	202 32.1		8 58.7	05.3	336 00.1	38.5	260 53.6	56.3	266 32.3	34.0			
12	217 34.6		23 58.3 S	4 06.5	351 00.8 S	17 39.0	275 55.8 S	20 56.2	281 34.6 S	21 34.0	Gacrux	172 45.0 S	56 53.7
13	232 37.0		38 57.9	07.7	6 01.5	39.5	290 58.0	56.1	296 36.9	33.9	Gienah	176 32.8 S	17 19.6
14	247 39.5		53 57.5	08.9	21 02.2	40.0	306 00.2	56.1	311 39.3	33.9	Hadar	149 44.1 N	60 11.2
15	262 42.0		68 57.1	10.1	36 02.9	40.5	321 02.3	56.0	326 41.6	33.9	Hamal	328 44.6 N	23 17.0
16	277 44.4		83 56.7	11.3	51 03.6	41.0	336 04.5	56.0	341 43.9	33.9	Kaus Aust.	84 35.9 S	34 24.2
17	292 46.9		98 56.3	12.5	66 04.3	41.5	351 06.7	55.9	356 46.3	33.9			
18	307 49.4		113 55.9 S	4 13.7	81 05.0 S	17 42.0	6 08.9 S	20 55.8	11 48.6 S	21 33.8	Kochab	137 19.6 N	74 18.9
19	322 51.8		128 55.4	14.9	96 05.7	42.5	21 11.1	55.8	26 50.9	33.8	Markab	14 17.1 N	15 00.1
20	337 54.3		143 55.0	16.1	111 06.4	43.0	36 13.2	55.7	41 53.2	33.8	Menkar	314 55.7 N	3 56.4
21	352 56.8		158 54.6	17.3	126 07.1	43.5	51 15.4	55.7	56 55.6	33.8	Menkent	148 54.1 S	36 10.7
22	7 59.2		173 54.2	18.5	141 07.8	44.0	66 17.6	55.6	71 57.9	33.7	Miaplacidus	221 48.1 S	69 33.3
23	23 01.7		188 53.8	19.7	156 08.5	44.5	81 19.8	55.6	87 00.2	33.7			
30													
00	38 04.1		203 53.4 S	4 21.0	171 09.2 S	17 45.0	96 21.9 S	20 55.5	102 02.5 S	21 33.7	Mirfak	309 35.9 N	49 43.5
01	53 06.6		218 53.0	22.2	186 09.9	45.5	111 24.1	55.4	117 04.9	33.7	Nunki	76 46.9 S	26 20.7
02	68 09.1		233 52.6	23.4	201 10.6	46.0	126 26.3	55.4	132 07.2	33.7	Peacock	54 20.8 S	56 51.7
03	83 11.5		248 52.2	24.6	216 11.3	46.5	141 28.5	55.3	147 09.5	33.6	Pollux	244 15.4 N	28 07.1
04	98 14.0		263 51.7	25.8	231 12.0	47.0	156 30.6	55.3	162 11.9	33.6	Procyon	245 40.6 N	5 19.5
05	113 16.5		278 51.3	27.0	246 12.6	47.5	171 32.8	55.2	177 14.2	33.6			
06	128 18.9		293 50.9 S	4 28.2	261 13.3 S	17 48.0	186 35.0 S	20 55.1	192 16.5 S	21 33.6	Rasalhague	96 43.0 N	12 35.5
07	143 21.4		308 50.5	29.4	276 14.0	48.5	201 37.2	55.1	207 18.8	33.6	Regulus	208 25.2 N	12 09.3
08	158 23.9		323 50.1	30.6	291 14.7	49.0	216 39.3	55.0	222 21.2	33.5	Rigel	281 49.4 S	8 14.7
09	173 26.3		338 49.7	31.8	306 15.4	49.5	231 41.5	55.0	237 23.5	33.5	Rigel Kent.	140 45.8 S	60 40.5
10	188 28.8		353 49.3	33.0	321 16.1	50.0	246 43.7	54.9	252 25.8	33.5	Sabik	102 57.7 S	15 40.6
11	203 31.3		8 48.8	34.2	336 16.8	50.5	261 45.8	54.8	267 28.1	33.5			
12	218 33.7		23 48.4 S	4 35.4	351 17.5 S	17 51.0	276 48.0 S	20 54.8	282 30.5 S	21 33.5	Schedar	350 24.6 N	56 19.8
13	233 36.2		38 48.0	36.6	6 18.2	51.5	291 50.2	54.7	297 32.8	33.4	Shaula	97 15.3 S	37 04.6
14	248 38.6		53 47.6	37.8	21 18.9	52.0	306 52.4	54.7	312 35.1	33.4	Sirius	259 08.1 S	16 39.7
15	263 41.1		68 47.2	39.0	36 19.6	52.5	321 54.5	54.6	327 37.4	33.4	Spica	159 12.8 S	10 57.5
16	278 43.6		83 46.8	40.2	51 20.3	53.0	336 56.7	54.6	342 39.8	33.4	Suhail	223 21.3 S	43 16.4
17	293 46.0		98 46.4	41.4	66 21.0	53.5	351 58.9	54.5	357 42.1	33.4			
18	308 48.5		113 45.9 S	4 42.6	81 21.7 S	17 54.0	7 01.0 S	20 54.4	12 44.4 S	21 33.3	Vega	81 05.6 N	38 45.2
19	323 51.0		128 45.5	43.8	96 22.4	54.5	22 03.2	54.4	27 46.7	33.3	Zuben'ubi	137 49.1 S	15 52.8
20	338 53.4		143 45.1	45.0	111 23.0	55.0	37 05.4	54.3	42 49.1	33.3			
21	353 55.9		158 44.7	46.2	126 23.7	55.5	52 07.5	54.3	57 51.4	33.3			
22	8 58.4		173 44.3	47.4	141 24.4	56.0	67 09.7	54.2	72 53.7	33.2	Venus	166 58.2 S	10 24
23	24 00.8		188 43.9	48.6	156 25.1	56.5	82 11.9	54.1	87 56.0	33.2	Mars	133 47.4 S	12 36
											Jupiter	58 24.7 S	17 35
											Saturn	64 01.7 S	17 13

Mer. Pass. 21 28.1

v -0.4 d 1.2

v 0.7 d 0.5

v 2.2 d 0.1

v 2.3 d 0.0

v 2.3 d 0.0

S.H.A. Mer. Pass. h m

G.M.T.		SUN		MOON				Lat.	Twilight		Sun-rise	Moonrise									
		G.H.A.	Dec.	G.H.A.	<i>v</i>	Dec.	<i>d</i>		H.P.	Naut.		Civil	28	29	30	31					
d	h	°	'	°	'	°	'	°	'	h	m	h	m	h	m	h	m	h	m		
SATURDAY	28 00	184	01.8	S 12	57.9	310	03.3	9.7	N 19	05.6	2.3	56.3	N 72	05 53	07 15	08 37	□	□	□	20 20	
	01	199	01.9		58.7	324	32.0	9.7	19	07.9	2.2	56.3	N 70	05 50	07 03	08 15	16 53	17 55	19 25	21 01	
	02	214	01.9	12	59.6	339	00.7	9.7	19	10.1	2.1	56.3	68	05 48	06 54	07 57	17 54	18 51	20 05	21 28	
	03	229	02.0	13	00.4	353	29.4	9.8	19	12.2	2.0	56.2	66	05 46	06 47	07 44	18 29	19 24	20 33	21 49	
	04	244	02.0		01.2	7	58.2	9.7	19	14.2	1.9	56.2	64	05 44	06 40	07 32	18 54	19 48	20 54	22 06	
	05	259	02.1		02.1	22	26.9	9.9	19	16.1	1.8	56.2	62	05 42	06 34	07 22	19 13	20 08	21 10	22 19	
	06	274	02.2	S 13	02.9	36	55.8	9.8	N 19	17.9	1.7	56.1	N 58	05 39	06 25	07 07	19 43	20 37	21 36	22 41	
	07	289	02.2		03.8	51	24.6	9.9	19	19.6	1.6	56.1	56	05 37	06 21	07 00	19 55	20 48	21 47	22 50	
	08	304	02.3		04.6	65	53.5	9.9	19	21.2	1.5	56.1	54	05 36	06 17	06 54	20 05	20 58	21 56	22 57	
	09	319	02.3	..	05.4	80	22.4	9.9	19	22.7	1.4	56.0	52	05 34	06 14	06 49	20 14	21 07	22 04	23 04	
	10	334	02.4		06.3	94	51.3	10.0	19	24.1	1.2	56.0	50	05 33	06 11	06 44	20 22	21 15	22 11	23 10	
	11	349	02.4		07.1	109	20.3	9.9	19	25.3	1.2	56.0	45	05 29	06 04	06 34	20 40	21 32	22 27	23 24	
	12	4	02.5	S 13	07.9	123	49.2	10.1	N 19	26.5	1.1	56.0	N 40	05 26	05 57	06 25	20 54	21 46	22 40	23 35	
	13	19	02.5		08.8	138	18.3	10.0	19	27.6	0.9	55.9	35	05 22	05 52	06 18	21 06	21 58	22 51	23 44	
	14	34	02.5		09.6	152	47.3	10.1	19	28.5	0.9	55.9	30	05 19	05 47	06 11	21 17	22 08	23 00	23 52	
	15	49	02.6	..	10.5	167	16.4	10.1	19	29.4	0.8	55.9	20	05 11	05 38	06 00	21 35	22 26	23 16	24 07	
	16	64	02.6		11.3	181	45.5	10.2	19	30.2	0.6	55.8	N 10	05 03	05 28	05 50	21 51	22 41	23 31	24 19	
	17	79	02.7		12.1	196	14.7	10.1	19	30.8	0.6	55.8	0	04 54	05 19	05 40	22 06	22 56	23 44	24 30	
	18	94	02.7	S 13	13.0	210	43.8	10.2	N 19	31.4	0.4	55.8	S 10	04 44	05 09	05 31	22 21	23 10	23 57	24 42	
	19	109	02.8		13.8	225	13.0	10.3	19	31.8	0.4	55.8	20	04 31	04 58	05 20	22 37	23 26	24 12	00 12	
	20	124	02.8		14.6	239	42.3	10.3	19	32.2	0.2	55.7	30	04 13	04 43	05 08	22 55	23 44	24 28	00 28	
	21	139	02.9	..	15.5	254	11.6	10.3	19	32.4	0.2	55.7	35	04 03	04 35	05 01	23 06	23 54	24 37	00 37	
	22	154	02.9		16.3	268	40.9	10.3	19	32.6	0.0	55.7	40	03 50	04 24	04 53	23 18	24 06	00 06	00 48	
	23	169	03.0		17.1	283	10.2	10.4	19	32.6	0.0	55.6	45	03 33	04 12	04 44	23 32	24 19	00 19	01 01	
	SUNDAY	29 00	184	03.0	S 13	18.0	297	39.6	10.4	N 19	32.6	0.2	55.6	S 50	03 12	03 57	04 32	23 50	24 36	00 36	01 16
01		199	03.1		18.8	312	09.0	10.5	19	32.4	0.2	55.6	52	03 01	03 49	04 27	23 58	24 44	00 44	01 23	
02		214	03.1		19.6	326	38.5	10.5	19	32.2	0.4	55.6	54	02 49	03 41	04 21	24 07	00 07	00 53	01 31	
03		229	03.1	..	20.5	341	08.0	10.5	19	31.8	0.4	55.5	56	02 35	03 32	04 15	24 18	00 18	01 03	01 40	
04		244	03.2		21.3	355	37.5	10.6	19	31.4	0.6	55.5	58	02 18	03 21	04 07	24 30	00 30	01 14	01 50	
05		259	03.2		22.1	10	07.1	10.6	19	30.8	0.6	55.5	S 60	01 56	03 09	03 59	24 44	00 44	01 28	02 01	
06		274	03.3	S 13	22.9	24	36.7	10.6	N 19	30.2	0.8	55.5	Moonset								
07		289	03.3		23.8	39	06.3	10.7	19	29.4	0.8	55.4	Lat.	Sun-set	Twilight						
08		304	03.4		24.6	53	36.0	10.7	19	28.6	0.9	55.4			Civil	Naut.	28	29	30	31	
09		319	03.4	..	25.4	68	05.7	10.8	19	27.7	1.1	55.4	o	h	m	h	m	h	m	h	m
10		334	03.4		26.3	82	35.5	10.8	19	26.6	1.1	55.3	N 72	14 49	16 11	17 32	□	□	□	16 28	
11		349	03.5		27.1	97	05.3	10.8	19	25.5	1.2	55.3	N 70	15 11	16 23	17 35	14 51	15 34	16 45	17 47	
12		4	03.5	S 13	27.9	111	35.1	10.9	N 19	24.3	1.4	55.3	68	15 29	16 32	17 38	13 50	14 38	15 04	15 18	
13		19	03.6		28.8	126	05.0	10.9	19	22.9	1.4	55.3	66	15 43	16 40	17 40	13 15	14 04	14 36	14 57	
14		34	03.6		29.6	140	34.9	11.0	19	21.5	1.5	55.3	64	15 54	16 46	17 42	12 51	13 40	14 15	14 40	
15		49	03.7	..	30.4	155	04.9	11.0	19	20.0	1.6	55.2	62	16 04	16 52	17 44	12 31	13 20	13 58	14 25	
16		64	03.7		31.2	169	34.9	11.0	19	18.4	1.7	55.2	60	16 13	16 57	17 46	12 15	13 05	13 44	14 13	
17		79	03.7		32.1	184	04.9	11.1	19	16.7	1.8	55.2	N 58	16 20	17 02	17 48	12 01	12 51	13 31	14 03	
18		94	03.8	S 13	32.9	198	35.0	11.1	N 19	14.9	1.9	55.2	56	16 27	17 06	17 50	11 50	12 40	13 21	13 54	
19		109	03.8		33.7	213	05.1	11.1	19	13.0	2.0	55.1	54	16 32	17 09	17 51	11 39	12 30	13 11	13 46	
20		124	03.9		34.5	227	35.2	11.2	19	11.0	2.0	55.1	52	16 38	17 13	17 53	11 30	12 21	13 03	13 39	
21		139	03.9	..	35.4	242	05.4	11.3	19	09.0	2.2	55.1	50	16 43	17 16	17 54	11 22	12 12	12 56	13 32	
22		154	03.9		36.2	256	35.7	11.3	19	06.8	2.3	55.1	45	16 53	17 23	17 58	11 05	11 55	12 39	13 18	
23		169	04.0		37.0	271	06.0	11.3	19	04.5	2.3	55.0	N 40	17 02	17 30	18 01	10 50	11 41	12 26	13 06	
MONDAY		30 00	184	04.0	S 13	37.8	285	36.3	11.4	N 19	02.2	2.4	55.0	35	17 09	17 35	18 05	10 38	11 29	12 15	12 56
	01	199	04.0		38.7	300	06.7	11.4	18	59.8	2.6	55.0	30	17 16	17 40	18 08	10 28	11 19	12 05	12 48	
	02	214	04.1		39.5	314	37.1	11.4	18	57.2	2.6	55.0	20	17 27	17 50	18 16	10 10	11 01	11 48	12 33	
	03	229	04.1	..	40.3	329	07.5	11.5	18	54.6	2.7	55.0	N 10	17 38	17 59	18 24	09 54	10 45	11 33	12 19	
	04	244	04.1		41.1	343	38.0	11.6	18	51.9	2.8	54.9	0	17 47	18 09	18 33	09 39	10 30	11 19	12 07	
	05	259	04.2		42.0	358	08.6	11.6	18	49.1	2.9	54.9	S 10	17 57	18 19	18 44	09 25	10 15	11 05	11 54	
	06	274	04.2	S 13	42.8	12	39.2	11.6	N 18	46.2	2.9	54.9	20	18 08	18 30	18 57	09 09	10 00	10 50	11 41	
	07	289	04.3		43.6	27	09.8	11.6	18	43.3	3.1	54.9	30	18 20	18 45	19 15	08 51	09 41	10 33	11 25	
	08	304	04.3		44.4	41	40.4	11.8	18	40.2	3.1	54.9	35	18 27	18 54	19 26	08 40	09 31	10 23	11 16	
	09	319	04.3	..	45.2	56	11.2	11.7	18	37.1	3.2	54.8	40	18 35	19 04	19 39	08 28	09 19	10 11	11 06	
	10	334	04.4		46.1	70	41.9	11.8	18	33.9	3.4	54.8	45	18 45	19 16	19 56	08 14	09 04	09 58	10 54	
	11	349	04.4		46.9	85	12.7	11.8	18	30.5	3.4	54.8	S 50	18 56	19 32	20 17	07 57	08 47	09 41	10 39	
	12	4	04.4	S 13	47.7	99	43.5	11.9	N 18	27.1	3.4	54.8	52	19 02	19 39	20 28	07 48	08 38	09 33	10 32	
	13	19	04.5		48.5	114	14.4	12.0	18	23.7	3.6	54.8	54	19 08							

		ARIES		VENUS -3.4		MARS +1.7		JUPITER -1.9		SATURN +0.8		STARS			
G.M.T.		G.H.A.	G.H.A.	Dec.	G.H.A.	Dec.	G.H.A.	Dec.	G.H.A.	Dec.	G.H.A.	Dec.	Name	S.H.A.	Dec.
TUESDAY	31 ^d 00 ^h	39 03.3	203 43.4	S 4 49.8	171 25.8	S 17 57.0	97 14.1	S 20 54.1	102 58.3	S 21 33.2			Acamar	315 47.6	S 40 27.4
	01	54 05.7	218 43.0	51.0	186 26.5	57.5	112 16.2	54.0	118 00.7	33.2			Achernar	335 55.3	S 57 26.0
	02	69 08.2	233 42.6	52.2	201 27.2	58.0	127 18.4	54.0	133 03.0	33.2			Acrux	173 53.6	S 62 53.0
	03	84 10.7	248 42.2	53.4	216 27.9	58.5	142 20.6	53.9	148 05.3	33.1			Adhara	255 43.1	S 28 55.0
	04	99 13.1	263 41.8	54.6	231 28.6	59.0	157 22.7	53.8	163 07.6	33.1			Aldebaran	291 34.0	N 16 26.0
	05	114 15.6	278 41.4	55.8	246 29.3	17 59.5	172 24.9	53.8	178 10.0	33.1					
	06	129 18.1	293 40.9	S 4 57.0	261 29.9	S 18 00.0	187 27.1	S 20 53.7	193 12.3	S 21 33.1			Alioth	166 55.5	N 56 10.0
	07	144 20.5	308 40.5	58.2	276 30.6	00.5	202 29.2	53.7	208 14.6	33.1			Alkaid	153 30.2	N 49 30.0
	08	159 23.0	323 40.1	4 59.4	291 31.3	01.0	217 31.4	53.6	223 16.9	33.0			Al Na'ir	28 32.6	S 47 09.0
	09	174 25.5	338 39.7	5 00.6	306 32.0	01.4	232 33.6	53.5	238 19.2	33.0			Alnilam	276 25.8	S 1 13.0
	10	189 27.9	353 39.3	01.8	321 32.7	01.9	247 35.7	53.5	253 21.6	33.0			Alphard	218 34.5	S 8 29.4
	11	204 30.4	8 38.8	03.0	336 33.4	02.4	262 37.9	53.4	268 23.9	33.0					
	12	219 32.9	23 38.4	S 5 04.2	351 34.1	S 18 02.9	277 40.0	S 20 53.4	283 26.2	S 21 32.9			Alphecca	126 44.5	N 26 50.8
	13	234 35.3	38 38.0	05.4	6 34.7	03.4	292 42.2	53.3	298 28.5	32.9			Alpheratz	358 23.7	N 28 52.9
	14	249 37.8	53 37.6	06.6	21 35.4	03.9	307 44.4	53.2	313 30.9	32.9			Altair	62 46.4	N 8 46.2
	15	264 40.2	68 37.2	07.8	36 36.1	04.4	322 46.5	53.2	328 33.2	32.9			Ankaa	353 53.9	S 42 30.9
	16	279 42.7	83 36.7	09.0	51 36.8	04.9	337 48.7	53.1	343 35.5	32.9			Antares	113 14.6	S 26 20.8
	17	294 45.2	98 36.3	10.2	66 37.5	05.4	352 50.9	53.0	358 37.8	32.8					
	18	309 47.6	113 35.9	S 5 11.4	81 38.2	S 18 05.9	7 53.0	S 20 53.0	13 40.1	S 21 32.8			Arcturus	146 31.7	N 19 23.0
	19	324 50.1	128 35.5	12.6	96 38.9	06.4	22 55.2	52.9	28 42.5	32.8			Atria	108 52.0	S 68 57.6
	20	339 52.6	143 35.1	13.8	111 39.5	06.9	37 57.4	52.9	43 44.8	32.8			Avior	234 33.9	S 59 22.9
	21	354 55.0	158 34.6	15.0	126 40.2	07.4	52 59.5	52.8	58 47.1	32.8			Bellatrix	279 13.7	N 6 18.9
	22	9 57.5	173 34.2	16.2	141 40.9	07.8	68 01.7	52.7	73 49.4	32.7			Betelgeuse	271 43.4	N 7 24.0
23	25 00.0	188 33.8	17.4	156 41.6	08.3	83 03.8	52.7	88 51.7	32.7						
WEDNESDAY	00	40 02.4	203 33.4	S 5 18.6	171 42.3	S 18 08.8	98 06.0	S 20 52.6	103 54.0	S 21 32.7			Canopus	264 13.2	S 52 40.3
	01	55 04.9	218 33.0	19.8	186 43.0	09.3	113 08.2	52.6	118 56.4	32.7			Capella	281 31.9	N 45 57.5
	02	70 07.4	233 32.5	21.0	201 43.6	09.8	128 10.3	52.5	133 58.7	32.6			Deneb	49 58.1	N 45 08.9
	03	85 09.8	248 32.1	22.2	216 44.3	10.3	143 12.5	52.4	149 01.0	32.6			Denebola	183 13.8	N 14 47.2
	04	100 12.3	263 31.7	23.4	231 45.0	10.8	158 14.6	52.4	164 03.3	32.6			Diphda	349 34.8	S 18 11.8
	05	115 14.7	278 31.3	24.6	246 45.7	11.3	173 16.8	52.3	179 05.6	32.6					
	06	130 17.2	293 30.8	S 5 25.8	261 46.4	S 18 11.8	188 19.0	S 20 52.2	194 08.0	S 21 32.6			Dubhe	194 40.0	N 61 57.3
	07	145 19.7	308 30.4	27.0	276 47.1	12.2	203 21.1	52.2	209 10.3	32.5			Elmath	279 01.8	N 28 34.5
	08	160 22.1	323 30.0	28.2	291 47.7	12.7	218 23.3	52.1	224 12.6	32.5			Eltanin	91 04.7	N 51 29.9
	09	175 24.6	338 29.6	29.4	306 48.4	13.2	233 25.4	52.1	239 14.9	32.5			Enif	34 25.4	N 9 42.1
	10	190 27.1	353 29.1	30.6	321 49.1	13.7	248 27.6	52.0	254 17.2	32.5			Fomalhaut	16 06.9	S 29 49.6
	11	205 29.5	8 28.7	31.8	336 49.8	14.2	263 29.8	51.9	269 19.5	32.4					
	12	220 32.0	23 28.3	S 5 33.0	351 50.5	S 18 14.7	278 31.9	S 20 51.9	284 21.9	S 21 32.4			Gacrux	172 44.9	S 56 53.7
	13	235 34.5	38 27.9	34.2	6 51.1	15.2	293 34.1	51.8	299 24.2	32.4			Gienah	176 32.8	S 17 19.6
	14	250 36.9	53 27.4	35.4	21 51.8	15.7	308 36.2	51.7	314 26.5	32.4			Hadar	149 44.0	S 60 11.1
	15	265 39.4	68 27.0	36.6	36 52.5	16.1	323 38.4	51.7	329 28.8	32.4			Hamal	328 44.6	N 23 17.0
	16	280 41.8	83 26.6	37.8	51 53.2	16.6	338 40.5	51.6	344 31.1	32.3			Kaus Aust.	84 35.9	S 34 24.2
	17	295 44.3	98 26.2	39.0	66 53.9	17.1	353 42.7	51.6	359 33.4	32.3					
	18	310 46.8	113 25.7	S 5 40.2	81 54.5	S 18 17.6	8 44.9	S 20 51.5	14 35.8	S 21 32.3			Kochab	137 19.6	N 74 18.9
	19	325 49.2	128 25.3	41.4	96 55.2	18.1	23 47.0	51.4	29 38.1	32.3			Markab	14 17.1	N 15 00.1
	20	340 51.7	143 24.9	42.6	111 55.9	18.6	38 49.2	51.4	44 40.4	32.2			Menkar	314 55.6	N 3 56.4
	21	355 54.2	158 24.5	43.8	126 56.6	19.1	53 51.3	51.3	59 42.7	32.2			Menkent	148 54.1	S 36 10.7
	22	10 56.6	173 24.0	45.0	141 57.2	19.5	68 53.5	51.2	74 45.0	32.2			Miaplacidus	221 48.1	S 69 33.3
23	25 59.1	188 23.6	46.2	156 57.9	20.0	83 55.6	51.2	89 47.3	32.2						
THURSDAY	00	41 01.6	203 23.2	S 5 47.4	171 58.6	S 18 20.5	98 57.8	S 20 51.1	104 49.7	S 21 32.2			Mirfak	309 35.9	N 49 43.5
	01	56 04.0	218 22.8	48.5	186 59.3	21.0	113 59.9	51.0	119 52.0	32.1			Nunki	76 46.9	S 26 20.7
	02	71 06.5	233 22.3	49.7	202 00.0	21.5	129 02.1	51.0	134 54.3	32.1			Peacock	54 20.9	S 56 51.7
	03	86 09.0	248 21.9	50.9	217 00.6	22.0	144 04.3	50.9	149 56.6	32.1			Pollux	244 15.4	N 28 07.1
	04	101 11.4	263 21.5	52.1	232 01.3	22.4	159 06.4	50.9	164 58.9	32.1			Procyon	245 40.5	N 5 19.5
	05	116 13.9	278 21.0	53.3	247 02.0	22.9	174 08.6	50.8	180 01.2	32.0					
	06	131 16.3	293 20.6	S 5 54.5	262 02.7	S 18 23.4	189 10.7	S 20 50.7	195 03.5	S 21 32.0			Rasalhague	96 43.0	N 12 35.5
	07	146 18.8	308 20.2	55.7	277 03.3	23.9	204 12.9	50.7	210 05.9	32.0			Regulus	208 25.2	N 12 09.3
	08	161 21.3	323 19.8	56.9	292 04.0	24.4	219 15.0	50.6	225 08.2	32.0			Rigel	281 49.4	S 8 14.7
	09	176 23.7	338 19.3	58.1	307 04.7	24.9	234 17.2	50.5	240 10.5	31.9			Rigel Kent.	140 45.8	S 60 40.5
	10	191 26.2	353 18.9	5 59.3	322 05.4	25.3	249 19.3	50.5	255 12.8	31.9			Sabik	102 57.7	S 15 40.6
	11	206 28.7	8 18.5	6 00.5	337 06.0	25.8	264 21.5	50.4	270 15.1	31.9					
	12	221 31.1	23 18.0	S 6 01.7	352 06.7	S 18 26.3	279 23.6	S 20 50.3	285 17.4	S 21 31.9			Schedar	350 24.6	N 56 19.8
	13	236 33.6	38 17.6	02.9	7 07.4	26.8	294 25.8	50.3	300 19.7	31.9			Shaula	97 15.3	S 37 04.6
	14	251 36.1	53 17.2	04.0	22 08.1	27.3	309 27.9	50.2	315 22.0	31.8			Sirius	259 08.0	S 16 39.7
	15	266 38.5	68 16.7	05.2	37 08.7	27.7	324 30.1	50.2	330 24.4	31.7			Spica	159 12.8	S 10 57.5
	16	281 41.0	83 16.3	06.4	52 09.4	28.2	339 32.2	50.1	345 26.7	31.8			Suhail	223 21.2	S 43 16.4
	17	296 43.5	98 15.9	07.6	67 10.1	28.7	354 34.4	50.0	0 29.0	31.8					
	18	311 45.9	113 15.4	S 6 08.8	82 10.7	S 18 29.2	9 36.5	S 20 50.0	15 31.3	S 21 31.7			Vega	81 05.6	N 38 45.2
	19	326 48.4	128 15.0	10.0	97 11.4	29.7	24 38.7	49.9	30 33.6	31.7			Zuben'ubi	137 49.1	S 15 52.8
	20	341 50.8	143 14.6	11.2	112 12.1	30.1	39 40.8	49.8	45 35.9	31.7				S.H.A.	Mer. Pass.
	21	356 53.3	158 14.1	12.4	127 12.8	30.6	54 43.0	49.8	60 38.2	31.7					
	22	11 55.8	173 13.7	13.6	142 13.4	31.1	69 45.1	49.7	75 40.5	31.7			Venus	163 31.0	h 10 26
23	26 58.2	188 13.3	14.8	157 14.1	31.6	84 47.3	49.6	90 42.9	31.6			Mars	131 39.9	h 12 33	
Mer. Pass.		21 16.3	v -0.4	d 1.2	v 0.7	d 0.5	v 2.2	d 0.1	v 2.3	d 0.0			Jupiter	58 03.6	h 17 25
													Saturn	63 51.6	h 17 02

G.M.T.	SUN				MOON				Lat.	Twilight		Sun-rise	Moonrise							
	G.H.A.		Dec.	G.H.A.	v	Dec.	d	H.P.		Naut.	Civil		31	1	2	3				
	^d ^h	[°] [']										[°] [']					[°] [']	[°] [']	[°] [']	[°] [']
TUESDAY	31 00	184 04.8	S 13	57.5	273 57.0	12.4	N 17	39.9	4.5	54.6	N 72	06 05	07 28	08 55	20 20	22 10	23 52	25 31		
	01	199 04.8		58.3	288 28.4	12.4		17 35.4	4.5	54.6	N 70	06 01	07 15	08 30	21 01	22 35	24 07	00 07		
	02	214 04.8		59.1	302 59.8	12.5		17 30.9	4.7	54.6	68	05 58	07 05	08 10	21 28	22 54	24 19	00 19		
	03	229 04.9	13	59.9	317 31.3	12.6		17 26.2	4.6	54.5	66	05 55	06 56	07 54	21 49	23 08	24 29	00 29		
	04	244 04.9	14	00.8	332 02.9	12.5		17 21.6	4.8	54.5	64	05 52	06 49	07 42	22 06	23 21	24 38	00 38		
	05	259 04.9		01.6	346 34.4	12.7		17 16.8	4.9	54.5	62	05 49	06 42	07 31	22 19	23 31	24 45	00 45		
	06	274 04.9	S 14	02.4	1 06.1	12.6	N 17	11.9	4.9	54.5	60	05 47	06 36	07 22	22 31	23 40	24 51	00 51		
	07	289 05.0		03.2	15 37.7	12.7		17 07.0	5.0	54.5	N 58	05 45	06 31	07 14	22 41	23 48	24 56	00 56		
	08	304 05.0		04.0	30 09.4	12.7		17 02.0	5.1	54.5	56	05 43	06 27	07 06	22 50	23 55	25 01	01 01		
	09	319 05.0	..	04.8	44 41.1	12.8		16 56.9	5.1	54.5	54	05 41	06 23	07 00	22 57	24 01	00 01	01 05		
	10	334 05.0		05.6	59 12.9	12.8		16 51.8	5.2	54.4	52	05 39	06 19	06 54	23 04	24 06	00 06	01 09		
	11	349 05.1		06.4	73 44.7	12.9		16 46.6	5.3	54.4	50	05 37	06 15	06 49	23 10	24 11	00 11	01 13		
	12										45	05 33	06 07	06 38	23 24	24 22	00 22	01 20		
	13	4 05.1	S 14	07.3	88 16.6	12.9	N 16	41.3	5.4	54.4	N 40	05 29	06 01	06 29	23 35	24 30	00 30	01 27		
	14	19 05.1		08.1	102 48.5	13.0		16 35.9	5.4	54.4	35	05 25	05 55	06 21	23 44	24 38	00 38	01 32		
	15	34 05.1		08.9	117 20.5	12.9		16 30.5	5.6	54.4	30	05 21	05 49	06 14	23 52	24 44	00 44	01 37		
	16	49 05.2	..	09.7	131 52.4	13.1		16 24.9	5.5	54.4	20	05 13	05 39	06 01	24 07	00 07	00 56	01 45		
	17	64 05.2		10.5	146 24.5	13.0		16 19.4	5.7	54.4	N 10	05 04	05 29	05 50	24 19	00 19	01 06	01 52		
18	79 05.2		11.3	160 56.5	13.2		16 13.7	5.7	54.4	0	04 54	05 19	05 40	24 30	00 30	01 15	01 59			
WEDNESDAY	18 00	94 05.2	S 14	12.1	175 28.7	13.1	N 16	08.0	5.8	54.4	S 10	04 43	05 08	05 30	24 42	00 42	01 25	02 06		
	01	109 05.3		12.9	190 00.8	13.2		16 02.2	5.9	54.4	20	04 29	04 56	05 19	00 12	00 54	01 35	02 13		
	02	124 05.3		13.7	204 33.0	13.2		15 56.3	5.9	54.3	30	04 10	04 40	05 06	00 28	01 09	01 46	02 21		
	03	139 05.3	..	14.5	219 05.2	13.3		15 50.4	6.0	54.3	35	03 59	04 31	04 58	00 37	01 16	01 52	02 26		
	04	154 05.3		15.3	233 37.5	13.3		15 44.4	6.1	54.3	40	03 45	04 20	04 49	00 48	01 26	02 00	02 31		
	05	169 05.3		16.1	248 09.8	13.3		15 38.3	6.1	54.3	45	03 28	04 07	04 39	01 01	01 36	02 08	02 37		
	06	184 05.4	S 14	16.9	262 42.1	13.4	N 15	32.2	6.2	54.3	S 50	03 05	03 51	04 27	01 16	01 49	02 18	02 44		
	07	199 05.4		17.8	277 14.5	13.4		15 26.0	6.3	54.3	52	02 54	03 43	04 21	01 23	01 56	02 23	02 48		
	08	214 05.4		18.6	291 46.9	13.5		15 19.7	6.3	54.3	54	02 41	03 34	04 15	01 31	02 02	02 28	02 52		
	09	229 05.4	..	19.4	306 19.4	13.5		15 13.4	6.4	54.3	56	02 25	03 24	04 08	01 40	02 10	02 34	02 56		
	10	244 05.4		20.2	320 51.9	13.5		15 07.0	6.5	54.3	58	02 06	03 13	04 00	01 50	02 18	02 41	03 00		
	11	259 05.5		21.0	335 24.4	13.5		15 00.5	6.5	54.3	S 60	01 41	02 59	03 51	02 01	02 27	02 48	03 05		
	12	274 05.5	S 14	21.8	349 56.9	13.6	N 14	54.0	6.6	54.3	Lat.		Sun-set		Twilight		Moonset			
	13	289 05.5		22.6	4 29.5	13.7		14 47.4	6.6	54.3	Naut.		Civil		1		2	3		
	14	304 05.5		23.4	19 02.2	13.6		14 40.8	6.7	54.3	^o	^h ^m	^h ^m	^h ^m	^h ^m	^h ^m	^h ^m	^h ^m		
	15	319 05.5	..	24.2	33 34.8	13.7		14 34.1	6.8	54.3	N 72	14 30	15 57	17 20	16 28	16 12	16 01	15 52		
	16	334 05.5		25.0	48 07.5	13.8		14 27.3	6.8	54.2	N 70	14 57	16 11	17 24	15 47	15 46	15 44	15 42		
	17	349 05.6		25.8	62 40.3	13.8		14 20.5	6.9	54.2	68	15 16	16 21	17 28	15 18	15 26	15 31	15 33		
18	4 05.6	S 14	26.6	77 13.1	13.8	N 14	13.6	7.0	54.2	66	15 32	16 30	17 31	14 57	15 10	15 20	15 26			
19	19 05.6		27.4	91 45.9	13.8		14 06.6	7.0	54.2	64	15 45	16 38	17 34	14 40	14 57	15 10	15 21			
20	34 05.6	..	28.2	106 18.7	13.9		13 59.6	7.1	54.2	62	15 56	16 44	17 37	14 25	14 46	15 02	15 16			
21	49 05.6		29.0	120 51.6	13.9		13 52.5	7.1	54.2	60	16 05	16 50	17 39	14 13	14 37	14 56	15 11			
22	64 05.6		29.8	135 24.5	13.9		13 45.4	7.2	54.2	N 58	16 13	16 55	17 42	14 03	14 28	14 49	15 07			
23	79 05.7		30.6	149 57.4	14.0		13 38.2	7.3	54.2	56	16 20	17 00	17 44	13 54	14 21	14 44	15 04			
THURSDAY	18 00	94 05.7	S 14	31.4	164 30.4	14.0	N 13	30.9	7.3	54.2	54	16 26	17 04	17 46	13 46	14 14	14 39	15 01		
	01	109 05.7		32.2	179 03.4	14.0		13 23.6	7.3	54.2	52	16 32	17 08	17 48	13 39	14 09	14 35	14 58		
	02	124 05.7		33.0	193 36.4	14.1		13 16.3	7.5	54.2	50	16 37	17 11	17 49	13 32	14 03	14 31	14 55		
	03	139 05.7	..	33.8	208 09.5	14.1		13 08.8	7.4	54.2	45	16 49	17 19	17 54	13 18	13 52	14 22	14 50		
	04	154 05.7		34.6	222 42.6	14.1		13 01.4	7.6	54.2	N 40	16 58	17 26	17 58	13 06	13 42	14 15	14 45		
	05	169 05.7		35.4	237 15.7	14.2		12 53.8	7.6	54.2	35	17 06	17 32	18 02	12 56	13 34	14 08	14 41		
	06	184 05.7	S 14	36.2	251 48.8	14.2	N 12	46.2	7.6	54.2	30	17 13	17 38	18 06	12 48	13 27	14 03	14 37		
	07	199 05.8		37.0	266 22.0	14.2		12 38.6	7.7	54.2	20	17 26	17 48	18 15	12 33	13 14	13 53	14 31		
	08	214 05.8		37.8	280 55.2	14.3		12 30.9	7.8	54.2	N 10	17 37	17 58	18 23	12 19	13 03	13 45	14 25		
	09	229 05.8	..	38.6	295 28.5	14.2		12 23.1	7.8	54.2	0	17 47	18 09	18 33	12 07	12 52	13 37	14 20		
	10	244 05.8		39.4	310 01.7	14.3		12 15.3	7.8	54.2	S 10	17 58	18 20	18 45	11 54	12 42	13 28	14 14		
	11	259 05.8		40.2	324 35.0	14.3		12 07.5	7.9	54.2	20	18 09	18 32	18 59	11 41	12 30	13 20	14 09		
	12	274 05.8	S 14	40.9	339 08.3	14.4	N 11	59.6	8.0	54.2	30	18 22	18 47	19 17	11 25	12 17	13 10	14 02		
	13	289 05.8		41.7	353 41.7	14.3		11 51.6	8.0	54.2	35	18 30	18 57	19 29	11 16	12 10	13 04	13 58		
	14	304 05.8		42.5	8 15.0	14.4		11 43.6	8.0	54.2	40	18 39	19 08	19 43	11 06	12 02	12 58	13 54		
	15	319 05.8	..	43.3	22 48.4	14.4		11 35.6	8.1	54.2	45	18 49	19 21	20 01	10 54	11 51	12 50	13 49		
	16	334 05.8		44.1	37 21.8	14.5		11 27.5	8.2	54.2	S 50	19 01	19 38	20 24	10 39	11 39	12 41	13 43		
	17	349 05.9		44.9	51 55.3	14.4		11 19.3	8.2	54.2	52	19 07	19 46	20 36	10 32	11 34	12 36	13 40		
FRIDAY	18 00	94 05.9	S 14	45.7	66 28.7	14.5	N 11	11.1	8.3	54.2	54	19 14	19 55	20 49	10 25	11 27	12 32	13 37		
	01	109 05.9		46.5	81 02.2															

	ARIES			VENUS -3.4			MARS +1.7			JUPITER -1.8			SATURN +0.8			STARS			
G.M.T.	G.H.A.		Dec.	G.H.A.		Dec.	G.H.A.		Dec.	G.H.A.		Dec.	G.H.A.		Dec.	Name	S.H.A.	Dec.	
F R I D A Y	d	h		d	h		d	h		d	h		d	h					
	3	00		6	16	0	18	32	0	20	49	6	21	31	6	Acamar	315 47.6	S 40 27.5	
	01	57 03.2	218 12.4	17.1	187 15.4	32.5	114 51.6	49.5	120 47.5	31.6	105 45.2	31.6	120 47.5	31.6	105 45.2	31.6	Alchernar	335 55.3	S 57 26.0
	02	72 05.6	233 12.0	18.3	202 16.1	33.0	129 53.7	49.4	135 49.8	31.6	135 49.8	31.6	135 49.8	31.6	135 49.8	31.6	Acrux	173 53.5	S 62 53.0
	03	87 08.1	248 11.5	19.5	217 16.8	33.5	144 55.9	49.4	150 52.1	31.5	150 52.1	31.5	150 52.1	31.5	150 52.1	31.5	Adhara	255 43.1	S 28 55.0
	04	102 10.6	263 11.1	20.7	232 17.5	34.0	159 58.0	49.3	165 54.4	31.5	165 54.4	31.5	165 54.4	31.5	165 54.4	31.5	Aldebaran	291 34.0	N 16 26.0
	05	117 13.0	278 10.7	21.9	247 18.1	34.4	175 00.2	49.2	180 56.7	31.5	180 56.7	31.5	180 56.7	31.5	180 56.7	31.5			
	06	132 15.5	293 10.2	23.1	262 18.8	34.9	190 02.3	49.2	195 59.0	31.5	195 59.0	31.5	195 59.0	31.5	195 59.0	31.5	Alioth	166 55.5	N 56 10.0
	07	147 18.0	308 09.8	24.3	277 19.5	35.4	205 04.4	49.1	211 01.3	31.4	211 01.3	31.4	211 01.3	31.4	211 01.3	31.4	Alkaid	153 30.2	N 49 30.3
	08	162 20.4	323 09.4	25.5	292 20.1	35.9	220 06.6	49.1	226 03.7	31.4	226 03.7	31.4	226 03.7	31.4	226 03.7	31.4	Al Na'ir	28 32.6	S 47 09.0
S A T U R D A Y	09	177 22.9	338 08.9	26.7	307 20.8	36.3	235 08.7	49.0	241 06.0	31.4	241 06.0	31.4	241 06.0	31.4	241 06.0	31.4	Alnilam	276 25.8	S 1 13.5
	10	192 25.3	353 08.5	27.8	322 21.5	36.8	250 10.9	48.9	256 08.3	31.4	256 08.3	31.4	256 08.3	31.4	256 08.3	31.4	Alphard	218 34.5	S 8 29.4
	11	207 27.8	8 08.1	29.0	337 22.1	37.3	265 13.0	48.9	271 10.6	31.4	271 10.6	31.4	271 10.6	31.4	271 10.6	31.4			
	12	222 30.3	23 07.6	30.2	352 22.8	37.8	280 15.2	48.8	286 12.9	31.3	286 12.9	31.3	286 12.9	31.3	286 12.9	31.3	Alphecca	126 44.5	N 26 50.8
	13	237 32.7	38 07.2	31.4	7 23.5	38.2	295 17.3	48.7	301 15.2	31.3	301 15.2	31.3	301 15.2	31.3	301 15.2	31.3	Alpheratz	358 23.7	N 28 52.9
	14	252 35.2	53 06.8	32.6	22 24.1	38.7	310 19.5	48.7	316 17.5	31.3	316 17.5	31.3	316 17.5	31.3	316 17.5	31.3	Altair	62 46.5	N 8 46.2
	15	267 37.7	68 06.3	33.8	37 24.8	39.2	325 21.6	48.6	331 19.8	31.3	331 19.8	31.3	331 19.8	31.3	331 19.8	31.3	Ankaa	353 53.9	S 42 30.9
	16	282 40.1	83 05.9	35.0	52 25.5	39.7	340 23.8	48.5	346 22.1	31.2	346 22.1	31.2	346 22.1	31.2	346 22.1	31.2	Antares	113 14.6	S 26 20.8
	17	297 42.6	98 05.4	36.2	67 26.1	40.1	355 25.9	48.5	1 24.4	31.2	1 24.4	31.2	1 24.4	31.2	1 24.4	31.2			
	18	312 45.1	113 05.0	37.3	82 26.8	40.6	10 28.0	48.4	16 26.7	31.2	16 26.7	31.2	16 26.7	31.2	16 26.7	31.2	Arcturus	146 31.7	N 19 23.0
S U N D A Y	19	327 47.5	128 04.6	38.5	97 27.5	41.1	25 30.2	48.3	31 29.1	31.2	31 29.1	31.2	31 29.1	31.2	31 29.1	31.2	Atria	108 52.0	S 68 57.6
	20	342 50.0	143 04.1	39.7	112 28.1	41.6	40 32.3	48.3	46 31.4	31.1	46 31.4	31.1	46 31.4	31.1	46 31.4	31.1	Avior	234 33.9	S 59 22.9
	21	357 52.4	158 03.7	40.9	127 28.8	42.0	55 34.5	48.2	61 33.7	31.1	61 33.7	31.1	61 33.7	31.1	61 33.7	31.1	Bellatrix	279 13.7	N 6 18.9
	22	12 54.9	173 03.2	42.1	142 29.5	42.5	70 36.6	48.1	76 30.0	31.1	76 30.0	31.1	76 30.0	31.1	76 30.0	31.1	Betelgeuse	271 43.4	N 7 24.0
	23	27 57.4	188 02.8	43.3	157 30.1	43.0	85 38.8	48.1	91 38.3	31.1	91 38.3	31.1	91 38.3	31.1	91 38.3	31.1			
	4	00		6	44	5	100	40	106	40	106	40	106	40	106	40	Canopus	264 13.2	S 52 40.3
	01	58 02.3	218 01.9	45.6	187 31.5	43.9	115 43.0	47.9	121 42.9	31.0	121 42.9	31.0	121 42.9	31.0	121 42.9	31.0	Capella	281 31.8	N 45 57.5
	02	73 04.8	233 01.5	46.8	202 32.1	44.4	130 45.2	47.9	136 45.2	31.0	136 45.2	31.0	136 45.2	31.0	136 45.2	31.0	Deneb	49 58.1	N 45 08.9
	03	88 07.2	248 01.0	48.0	217 32.8	44.9	145 47.3	47.8	151 47.5	31.0	151 47.5	31.0	151 47.5	31.0	151 47.5	31.0	Denebola	183 13.7	N 14 47.2
	04	103 09.7	263 00.6	49.2	232 33.4	45.3	160 49.5	47.7	166 49.8	30.9	166 49.8	30.9	166 49.8	30.9	166 49.8	30.9	Diphda	349 34.8	S 18 11.8
05	118 12.2	278 00.2	50.4	247 34.1	45.8	175 51.6	47.7	181 52.1	30.9	181 52.1	30.9	181 52.1	30.9	181 52.1	30.9				
S A T U R D A Y	06	133 14.6	292 59.7	51.6	262 34.8	46.3	190 53.7	47.6	196 54.4	30.9	196 54.4	30.9	196 54.4	30.9	196 54.4	30.9	Dubhe	194 40.0	N 61 57.3
	07	148 17.1	307 59.3	52.7	277 35.4	46.7	205 55.9	47.5	211 56.7	30.9	211 56.7	30.9	211 56.7	30.9	211 56.7	30.9	Elnath	279 01.8	N 28 34.5
	08	163 19.6	322 58.8	53.9	292 36.1	47.2	220 58.0	47.5	226 59.0	30.8	226 59.0	30.8	226 59.0	30.8	226 59.0	30.8	Eltanin	91 04.7	N 51 29.9
	09	178 22.0	337 58.4	55.1	307 36.8	47.7	236 00.2	47.4	242 01.4	30.8	242 01.4	30.8	242 01.4	30.8	242 01.4	30.8	Enif	34 25.4	N 9 42.1
	10	193 24.5	352 58.0	56.3	322 37.4	48.1	251 02.3	47.3	257 03.7	30.8	257 03.7	30.8	257 03.7	30.8	257 03.7	30.8	Fomalhaut	16 06.9	S 29 49.6
	11	208 26.9	7 57.5	57.5	337 38.1	48.6	266 04.4	47.3	272 06.0	30.8	272 06.0	30.8	272 06.0	30.8	272 06.0	30.8			
	12	223 29.4	22 57.1	58.7	352 38.7	49.1	281 06.6	47.2	287 08.3	30.7	287 08.3	30.7	287 08.3	30.7	287 08.3	30.7	Gacrux	172 44.9	S 56 53.7
	13	238 31.9	37 56.6	59.8	7 39.4	49.6	296 08.7	47.1	302 10.6	30.7	302 10.6	30.7	302 10.6	30.7	302 10.6	30.7	Gienah	176 32.8	S 17 19.6
	14	253 34.3	52 56.2	7 01.0	22 40.1	50.0	311 10.8	47.1	317 12.9	30.7	317 12.9	30.7	317 12.9	30.7	317 12.9	30.7	Hadar	149 44.0	S 60 11.1
	15	268 36.8	67 55.7	02.2	37 40.7	50.5	326 13.0	47.0	332 15.2	30.7	332 15.2	30.7	332 15.2	30.7	332 15.2	30.7	Hamal	328 44.6	N 23 17.0
S U N D A Y	16	283 39.3	82 55.3	03.4	52 41.4	51.0	341 15.1	46.9	347 17.5	30.7	347 17.5	30.7	347 17.5	30.7	347 17.5	30.7	Kaus Aust.	84 35.9	S 34 24.2
	17	298 41.7	97 54.8	04.6	67 42.0	51.4	356 17.3	46.9	2 19.8	30.6	2 19.8	30.6	2 19.8	30.6	2 19.8	30.6			
	18	313 44.2	112 54.4	7 05.7	82 42.7	51.9	11 19.4	46.8	17 22.1	30.6	17 22.1	30.6	17 22.1	30.6	17 22.1	30.6	Kochab	137 19.6	N 74 18.8
	19	328 46.7	127 54.0	06.9	97 43.4	52.4	26 21.5	46.7	32 24.4	30.6	32 24.4	30.6	32 24.4	30.6	32 24.4	30.6	Markab	14 17.1	N 15 00.1
	20	343 49.1	142 53.5	08.1	112 44.0	52.8	41 23.7	46.7	47 26.7	30.6	47 26.7	30.6	47 26.7	30.6	47 26.7	30.6	Menkar	314 55.6	N 3 56.4
	21	358 51.6	157 53.1	09.3	127 44.7	53.3	56 25.8	46.6	62 29.0	30.5	62 29.0	30.5	62 29.0	30.5	62 29.0	30.5	Menkent	148 54.1	S 36 10.7
	22	13 54.0	172 52.6	10.5	142 45.3	53.8	71 27.9	46.5	77 31.3	30.5	77 31.3	30.5	77 31.3	30.5	77 31.3	30.5	Miaplacidus	221 48.0	S 69 33.3
	23	28 56.5	187 52.2	11.6	157 46.0	54.2	86 30.1	46.5	92 33.6	30.5	92 33.6	30.5	92 33.6	30.5	92 33.6	30.5			
	5	00		7	12	8	101	32	107	35	107	35	107	35	107	35	Mirfak	309 35.9	N 49 43.5
	01	59 01.4	217 51.3	14.0	187 47.3	55.2	116 34.3	46.3	122 38.2	30.4	122 38.2	30.4	122 38.2	30.4	122 38.2	30.4	Nunki	76 46.9	S 26 20.7
02	74 03.9	232 50.8	15.2	202 48.0	55.6	131 36.5	46.2	137 40.5	30.4	137 40.5	30.4	137 40.5	30.4	137 40.5	30.4	Peacock	54 20.9	S 56 51.7	
03	89 06.4	247 50.4	16.4	217 48.6	56.1	146 38.6	46.2	152 42.8	30.4	152 42.8	30.4	152 42.8	30.4	152 42.8	30.4	Pollux	244 15.4	N 28 07.1	
04	104 08.8	262 49.9	17.5	232 49.3	56.6	161 40.7	46.1	167 45.1	30.4	167 45.1	30.4	167 45.1	30.4	167 45.1	30.4	Procyon	245 40.5	N 5 19.4	
05	119 11.3	277 49.5	18.7	247 49.9	57.0	176 42.9	46.0	182 47.4	30.3	182 47.4	30.3	182 47.4	30.3	182 47.4	30.3				
S U N D A Y	06	134 13.8	292 49.0	19.9	262 50.6	57.5	191 45.0	46.0	197 49.7	30.3	197 49.7</								

G.M.T.		SUN				MOON				Lat.	Twilight		Sun-rise	Moonrise										
		G.H.A.		Dec.	G.H.A.	<i>v</i>	Dec.	<i>d</i>	H.P.		Naut.	Civil		3	4	5	6							
d	h	°	'	°	'	°	'	°	'	°	'	h	m	h	m	h	m	h	m					
3	00	184	05.9	S14	55.2	241	11.8	14.7	N	9	29.0	8.8	54.3	N	70	06	12	07	15					
	01	199	05.9		55.9	255	45.5	14.7		9	20.2	8.8	54.3		68	06	07	15	08					
	02	214	05.9		56.7	270	19.2	14.8		9	11.4	8.9	54.3		66	06	03	07	05					
	03	229	05.9		57.5	284	53.0	14.7		9	02.5	8.9	54.3		64	06	00	06	57					
	04	244	05.9		58.3	299	26.7	14.8		8	53.6	8.9	54.3		62	05	56	06	50					
	05	259	05.9		59.1	314	00.5	14.8		8	44.7	9.0	54.3		60	05	54	06	43					
	06	274	05.9	S14	59.9	328	34.3	14.8	N	8	35.7	9.1	54.3	N	58	05	51	06	38					
	07	289	05.9	15	00.6	343	08.1	14.8		8	26.6	9.0	54.3		56	05	48	06	33					
	08	304	05.9		01.4	357	41.9	14.8		8	17.6	9.1	54.3		54	05	46	06	28					
	09	319	05.9		02.2	12	15.7	14.8		8	08.5	9.2	54.3		52	05	44	06	24					
FRI	10	334	05.9		03.0	26	49.5	14.8		7	59.3	9.2	54.4		50	05	42	06	20					
	11	349	05.9		03.8	41	23.3	14.9		7	50.1	9.2	54.4		45	05	37	06	11					
	12	4	05.9	S15	04.6	55	57.2	14.8	N	7	40.9	9.2	54.4	N	40	05	32	06	04					
	13	19	05.9		05.3	70	31.0	14.9		7	31.7	9.3	54.4		35	05	27	05	57					
	14	34	05.9		06.1	85	04.9	14.8		7	22.4	9.4	54.4		30	05	23	05	51					
	15	49	05.9		06.9	99	38.7	14.9		7	13.0	9.3	54.4		20	05	14	05	40					
	16	64	05.9		07.7	114	12.6	14.9		7	03.7	9.4	54.4	N	10	05	04	05	29					
	17	79	05.9		08.5	128	46.5	14.9		6	54.3	9.4	54.4		0	04	54	05	18					
	18	94	05.9	S15	09.2	143	20.4	14.9	N	6	44.9	9.5	54.4	S	10	04	42	05	07					
	19	109	05.9		10.0	157	54.3	14.9		6	35.4	9.5	54.4		20	04	27	04	54					
SAT	20	124	05.9		10.8	172	28.2	14.9		6	25.9	9.5	54.5		30	04	08	04	38					
	21	139	05.9		11.6	187	02.1	14.9		6	16.4	9.6	54.5		35	03	55	04	28					
	22	154	05.9		12.3	201	36.0	14.9		6	06.8	9.5	54.5		40	03	41	04	17					
	23	169	05.9		13.1	216	09.9	14.9		5	57.3	9.6	54.5		45	03	22	04	03					
	00	184	05.9	S15	13.9	230	43.8	14.9	N	5	47.7	9.7	54.5	S	50	02	58	03	45					
	01	199	05.9		14.7	245	17.7	14.9		5	38.0	9.7	54.5		52	02	46	03	37					
	02	214	05.9		15.4	259	51.6	14.9		5	28.3	9.7	54.5		54	02	32	03	27					
	03	229	05.9		16.2	274	25.5	14.9		5	18.6	9.7	54.5		56	02	15	03	16					
	04	244	05.9		17.0	288	59.4	14.9		5	08.9	9.7	54.6		58	01	54	03	04					
	05	259	05.9		17.8	303	33.3	14.9		4	59.2	9.8	54.6	S	60	01	25	02	49					
SUN	06	274	05.9	S15	18.5	318	07.2	14.9	N	4	49.4	9.8	54.6											
	07	289	05.8		19.3	332	41.1	14.9		4	39.6	9.9	54.6		Lat.	Sun-set	Twilight		Moonset					
	08	304	05.8		20.1	347	15.0	14.9		4	29.7	9.8	54.6				Civil	Naut.	3	4	5	6		
	09	319	05.8		20.9	1	48.9	14.8		4	19.9	9.9	54.6											
	10	334	05.8		21.6	16	22.7	14.9		4	10.0	9.9	54.6											
	11	349	05.8		22.4	30	56.6	14.9		4	00.1	9.9	54.6											
	12	4	05.8	S15	23.2	45	30.5	14.9	N	3	50.2	10.0	54.7	N	72	14	11	15	44	17	08	15	52	
	13	19	05.8		23.9	60	04.4	14.8		3	40.2	9.9	54.7		N	70	14	41	15	59	17	14	15	42
	14	34	05.8		24.7	74	38.2	14.9		3	30.3	10.0	54.7			68	15	04	16	11	17	19	15	33
	15	49	05.8		25.5	89	12.1	14.8		3	20.3	10.0	54.7			66	15	21	16	21	17	23	15	26
MON	16	64	05.8		26.2	103	45.9	14.9		3	10.3	10.1	54.7			64	15	35	16	29	17	26	15	21
	17	79	05.7		27.0	118	19.8	14.8		3	00.2	10.0	54.7			62	15	47	16	36	17	30	15	16
	18	94	05.7	S15	27.8	132	53.6	14.8	N	2	50.2	10.1	54.8	N	58	16	06	16	49	17	35	15	07	
	19	109	05.7		28.6	147	27.4	14.8		2	40.1	10.1	54.8			56	16	14	16	54	17	38	15	04
	20	124	05.7		29.3	162	01.2	14.8		2	30.0	10.1	54.8			54	16	21	16	58	17	40	15	01
	21	139	05.7		30.1	176	35.0	14.8		2	19.9	10.1	54.8			52	16	27	17	03	17	43	14	58
	22	154	05.7		30.9	191	08.8	14.7		2	09.8	10.2	54.8			50	16	32	17	07	17	45	14	55
	23	169	05.7		31.6	205	42.5	14.8		1	59.6	10.1	54.8			45	16	45	17	15	17	50	14	50
	00	184	05.7	S15	32.4	220	16.3	14.7	N	1	49.5	10.2	54.9	N	40	16	55	17	23	17	55	14	45	
	01	199	05.6		33.1	234	50.0	14.7		1	39.3	10.2	54.9			35	17	03	17	30	18	00	14	41
TUE	02	214	05.6		33.9	249	23.7	14.7		1	29.1	10.2	54.9			30	17	11	17	36	18	04	14	37
	03	229	05.6		34.7	263	57.4	14.7		1	18.9	10.2	54.9			20	17	24	17	47	18	13	14	31
	04	244	05.6		35.4	278	31.1	14.7		1	08.7	10.2	54.9	N	10	17	36	17	58	18	23	14	25	
	05	259	05.6		36.2	293	04.8	14.6		0	58.5	10.2	54.9			0	17	47	18	09	18	33	14	20
	06	274	05.6	S15	37.0	307	38.4	14.7	N	0	48.3	10.3	55.0	S	10	17	58	18	20	18	46	14	14	
	07	289	05.5		37.7	322	12.1	14.6		0	38.0	10.3	55.0			20	18	11	18	34	19	01	14	09
	08	304	05.5		38.5	336	45.7	14.6		0	27.7	10.2	55.0			30	18	24	18	50	19	20	14	02
	09	319	05.5		39.3	351	19.3	14.5		0	17.5	10.3	55.0			35	18	33	19	00	19	33	13	58
	10	334	05.5		40.0	5	52.8	14.6	N	0	07.2	10.3	55.0			40	18	42	19	12	19	47	13	54
	11	349	05.5		40.8	20	26.4	14.5	S	0	03.1	10.3	55.1			45	18	53	19	26	20	06	13	49
WED	12	4	05.5	S15	41.5	34	59.9	14.5	S	0	13.4	10.3	55.1	S	50	19	06	19	43	20	31	13	43	
	13	19	05.4		42.3	49	33.4	14.5		0	23.7	10.3	55.1			52	19	13	19	52	20	43	13	40
	14	34	05.4		43.1	64	06.9	14.4		0	34.0	10.3	55.1			54	19	20	20	02	20	58	13	37
	15	49	05.4		43.8	78	40.3	14.5		0	44.3	10.3	55.1			56	19	28	20	13	21	15	13	33
	16	64	05.4		44.6	93	13.8	14.4		0	54.6	10.4	55.1			58	19	36	20	25	21	37	13	30
	17	79	05.4		45.3	107	47.2	14.4		1	05.0	10.3	55.2	S	60	19	46	20	41	22	07	13	25	
	18	94	05.3	S15	46.1	122	20.6	14.3	S	1	15.3	10.3	55.2											
	19	109	05.3		46.8	136	53.9	14.3		1	25.6	10.4	55.2											
	20	124	05.3		47.6	151	27.2	14.3		1	36.0	10.3	55.2											
	21	139	05.3		48.4	166	00.5	14.3		1	46.3	10.3	55.2											
THU	22	154	05.3		49.1	180	33.8	14.2		1	56.6	10.4	55.3											
	23	169	05.2		49.9	195	07.0	14.3		2	07.0	10.3	55.3											
		S.D. 16.2	<i>d</i>	0.8	S.D.	14.8		14.9	15.0						Day	SUN		MOON						
															Eqn. of Time	Mer. Pass.	Mer. Upper	Pass. Lower	Age	Phase				
															00h	12h								
															m s	m s	h m	h m	h m	d				
															3	16 24	16 24	11 44	08 09	20 31	25			
															4	16 24	16 23	11 44	08 53	21 14	26			

		ARIES		VENUS -3-4		MARS +1-7		JUPITER -1-8		SATURN +0-8		STARS			
G.M.T.		G.H.A.		G.H.A. Dec.		G.H.A. Dec.		G.H.A. Dec.		G.H.A. Dec.		Name		S.H.A. Dec.	
MONDAY	6 ^h 00 ^m	44 58.1	202 40.9 S	7 41.0	173 02.4 S	19 05.8	102 23.4 S	20 44.7	108 31.2 S	21 29.9	Acamar	315 47.6	S 40 27.5		
	01	60 00.6	217 40.5	42.2	188 03.0	06.2	117 25.5	44.7	123 33.5	29.8	Achernar	335 55.3	S 57 26.0		
	02	75 03.0	232 40.0	43.4	203 03.7	06.7	132 27.6	44.6	138 35.8	29.8	Acrux	173 53.5	S 62 52.9		
	03	90 05.5	247 39.6	44.5	218 04.3	07.2	147 29.7	44.5	153 38.1	29.8	Adhara	255 43.0	S 28 55.0		
	04	105 08.0	262 39.1	45.7	233 05.0	07.6	162 31.9	44.5	168 40.4	29.8	Aldebaran	291 33.9	N 16 26.0		
	05	120 10.4	277 38.7	46.9	248 05.6	08.1	177 34.0	44.4	183 42.7	29.7					
	06	135 12.9	292 38.2 S	7 48.1	263 06.3 S	19 08.5	192 36.1 S	20 44.3	198 45.0 S	21 29.7	Alioth	166 55.5	N 56 10.0		
	07	150 15.4	307 37.7	49.2	278 06.9	09.0	207 38.3	44.2	213 47.3	29.7	Alkaid	153 30.2	N 49 30.3		
	08	165 17.8	322 37.3	50.4	293 07.6	09.5	222 40.4	44.2	228 49.6	29.7	Al Na'ir	28 32.7	S 47 09.9		
	09	180 20.3	337 36.8	51.6	308 08.2	09.9	237 42.5	44.1	243 51.9	29.6	Alnilam	276 25.8	S 1 13.5		
TUESDAY	10	195 22.8	352 36.4	52.7	323 08.9	10.4	252 44.6	44.0	258 54.2	29.6	Alphard	218 34.5	S 8 29.4		
	11	210 25.2	7 35.9	53.9	338 09.5	10.8	267 46.8	44.0	273 56.5	29.6					
	12	225 27.7	22 35.5 S	7 55.1	353 10.1 S	11.3	282 48.9 S	20 43.9	288 58.8 S	21 29.6	Alphecca	126 44.5	N 26 50.8		
	13	240 30.1	37 35.0	56.3	8 10.8	11.7	297 51.0	43.8	300 01.1	29.5	Alpheratz	358 23.7	N 28 52.9		
	14	255 32.6	52 34.5	57.4	23 11.4	12.2	312 53.1	43.8	319 03.4	29.5	Altair	62 46.5	N 8 46.2		
	15	270 35.1	67 34.1	58.6	38 12.1	12.6	327 55.3	43.7	334 05.7	29.5	Ankaa	353 53.9	S 42 30.9		
	16	285 37.5	82 33.6	7 59.8	53 12.7	13.1	342 57.4	43.6	349 07.9	29.4	Antares	113 14.6	S 26 20.8		
	17	300 40.0	97 33.2	8 00.9	68 13.4	13.6	357 59.5	43.5	4 10.2	29.4					
	18	315 42.5	112 32.7 S	8 02.1	83 14.0 S	19 14.0	13 01.6 S	20 43.5	19 12.5 S	21 29.4	Arcturus	146 31.7	N 19 23.0		
	19	330 44.9	127 32.2	03.3	98 14.7	14.5	28 03.8	43.4	34 14.8	29.4	Atria	108 52.0	S 68 57.6		
WEDNESDAY	20	345 47.4	142 31.8	04.4	113 15.3	14.9	43 05.9	43.3	49 17.1	29.3	Avior	234 33.8	S 59 22.9		
	21	0 49.9	157 31.3	05.6	128 16.0	15.4	58 08.0	43.3	64 19.4	29.3	Bellatrix	279 13.7	N 6 18.9		
	22	15 52.3	172 30.9	06.8	143 16.6	15.8	73 10.1	43.2	79 21.7	29.3	Betelgeuse	271 43.4	N 7 24.0		
	23	30 54.8	187 30.4	07.9	158 17.3	16.3	88 12.3	43.1	94 24.0	29.3					
	00	45 57.3	202 29.9 S	8 09.1	173 17.9 S	19 16.7	103 14.4 S	20 43.0	109 26.3 S	21 29.2	Canopus	264 13.1	S 52 40.3		
	01	60 59.7	217 29.5	10.3	188 18.6	17.2	118 16.5	43.0	124 28.6	29.2	Capella	281 31.8	N 45 57.5		
	02	76 02.2	232 29.0	11.4	203 19.2	17.6	133 18.6	42.9	139 30.9	29.2	Deneb	49 58.1	N 45 08.9		
	03	91 04.6	247 28.6	12.6	218 19.8	18.1	148 20.7	42.8	154 33.2	29.2	Denebola	183 13.7	N 14 47.2		
	04	106 07.1	262 28.1	13.8	233 20.5	18.5	163 22.9	42.8	169 35.5	29.1	Diphda	349 34.8	S 18 11.8		
	05	121 09.6	277 27.6	14.9	248 21.1	19.0	178 25.0	42.7	184 37.8	29.1					
THURSDAY	06	136 12.0	292 27.2 S	8 16.1	263 21.8 S	19 19.4	193 27.1 S	20 42.6	199 40.1 S	21 29.1	Dubhe	194 39.9	N 61 57.3		
	07	151 14.5	307 26.7	17.3	278 22.4	19.9	208 29.2	42.5	214 42.4	29.1	Elmath	279 01.7	N 28 34.5		
	08	166 17.0	322 26.2	18.4	293 23.1	20.3	223 31.3	42.5	229 44.7	29.0	Eltanin	91 04.7	N 51 29.9		
	09	181 19.4	337 25.8	19.6	308 23.7	20.8	238 33.5	42.4	244 47.0	29.0	Enif	34 25.4	N 9 42.1		
	10	196 21.9	352 25.3	20.7	323 24.3	21.2	253 35.6	42.3	259 49.3	29.0	Fomalhaut	16 06.9	S 29 49.6		
	11	211 24.4	7 24.9	21.9	338 25.0	21.7	268 37.7	42.3	274 51.6	28.9					
	12	226 26.8	22 24.4 S	8 23.1	353 25.6 S	22.1	283 39.8 S	20 42.2	289 53.9 S	21 28.9	Gacrux	172 44.9	S 56 53.7		
	13	241 29.3	37 23.9	24.2	8 26.3	22.6	298 41.9	42.1	304 56.2	28.9	Gienah	176 32.8	S 17 19.6		
	14	256 31.7	52 23.5	25.4	23 26.9	23.0	313 44.1	42.0	319 58.5	28.9	Hadar	149 44.0	S 60 11.1		
	15	271 34.2	67 23.0	26.6	38 27.5	23.5	328 46.2	42.0	335 00.8	28.8	Hamal	328 44.5	N 23 17.0		
FRIDAY	16	286 36.7	82 22.5	27.7	53 28.2	23.9	343 48.3	41.9	350 03.0	28.8	Kaus Aust.	84 35.9	S 34 24.2		
	17	301 39.1	97 22.1	28.9	68 28.8	24.4	358 50.4	41.8	5 05.3	28.8					
	18	316 41.6	112 21.6 S	8 30.0	83 29.5 S	19 24.8	13 52.5 S	20 41.7	20 07.6 S	21 28.8	Kochab	137 19.6	N 74 18.8		
	19	331 44.1	127 21.1	31.2	98 30.1	25.3	28 54.7	41.7	35 09.9	28.7	Markab	14 17.1	N 15 00.1		
	20	346 46.5	142 20.7	32.4	113 30.7	25.7	43 56.8	41.6	50 12.2	28.7	Menkar	314 55.6	N 3 56.4		
	21	1 49.0	157 20.2	33.5	128 31.4	26.2	58 58.9	41.5	65 14.5	28.7	Menkent	148 54.1	S 36 10.7		
	22	16 51.5	172 19.7	34.7	143 32.0	26.6	74 01.0	41.5	80 16.8	28.7	Miaplacidus	221 48.0	S 69 33.3		
	23	31 53.9	187 19.3	35.8	158 32.7	27.1	89 03.1	41.4	95 19.1	28.6					
	00	46 56.4	202 18.8 S	8 37.0	173 33.3 S	19 27.5	104 05.2 S	20 41.3	110 21.4 S	21 28.6	Mirfak	309 35.8	N 49 43.5		
	01	61 58.9	217 18.3	38.2	188 33.9	28.0	119 07.3	41.2	125 23.7	28.6	Nunki	76 46.9	S 26 20.7		
02	77 01.3	232 17.8	39.3	203 34.6	28.4	134 09.5	41.2	140 26.0	28.6	Peacock	54 20.9	S 56 51.7			
03	92 03.8	247 17.4	40.5	218 35.2	28.8	149 11.6	41.1	155 28.3	28.5	Pollux	244 15.4	N 28 07.0			
04	107 06.2	262 16.9	41.6	233 35.8	29.3	164 13.7	41.0	170 30.6	28.5	Procyon	245 40.5	N 5 19.4			
05	122 08.7	277 16.4	42.8	248 36.5	29.7	179 15.8	41.0	185 32.9	28.5						
SATURDAY	06	137 11.2	292 16.0 S	8 43.9	263 37.1 S	19 30.2	194 17.9 S	20 40.9	200 35.1 S	21 28.4	Rasalhague	96 43.0	N 12 35.4		
	07	152 13.6	307 15.5	45.1	278 37.8	30.6	209 20.0	40.8	215 37.4	28.4	Regulus	208 25.2	N 12 09.3		
	08	167 16.1	322 15.0	46.3	293 38.4	31.1	224 22.2	40.7	230 39.7	28.4	Rigel	281 49.3	S 8 14.7		
	09	182 18.6	337 14.6	47.4	308 39.0	31.5	239 24.3	40.7	245 42.0	28.4	Rigel Kent.	140 45.8	S 60 40.5		
	10	197 21.0	352 14.1	48.6	323 39.7	32.0	254 26.4	40.6	260 44.3	28.3	Sabik	102 57.7	S 15 40.6		
	11	212 23.5	7 13.6	49.7	338 40.3	32.4	269 28.5	40.5	275 46.6	28.3					
	12	227 26.0	22 13.1 S	8 50.9	353 40.9 S	19 32.8	284 30.6 S	20 40.4	290 48.9 S	21 28.3	Schedar	350 24.6	N 56 19.8		
	13	242 28.4	37 12.7	52.0	8 41.6	33.3	299 32.7	40.4	305 51.2	28.3	Shaula	97 15.3	S 37 04.6		
	14	257 30.9	52 12.2	53.2	23 42.2	33.7	314 34.8	40.3	320 53.5	28.2	Sirius	259 08.0	S 16 39.7		
	15	272 33.3	67 11.7	54.3	38 42.8	34.2	329 36.9	40.2	335 55.8	28.2	Spica	159 12.8	N 10 57.5		
SUNDAY	16	287 35.8	82 11.2	55.5	53 43.5	34.6	344 39.1	40.1	350 58.1	28.2	Suhail	223 21.2	S 43 16.4		
	17	302 38.3	97 10.8	56.6	68 44.1	35.0	359 41.2	40.1	6 00.3	28.1					
	18	317 40.7	112 10.3 S	8 57.8	83 44.7 S	19 35.5	14 43.3 S	20 40.0	21 02.6 S	21 28.1	Vega	81 05.7	N 38 45.2		
	19	332 43.2	127 09.8	8 59.0	98 45.4	35.9	29 45.4	39.9	36 04.9	28.1	Zuben'ubi	137 49.1	S 15 52.8		
	20	347 45.7	142 09.4	9 00.1	113 46.0	36.4	44 47.5	39.8	51 07.2	28.1					
	21	2 48.1	157 08.9	01.3	128 46.6	36.8	59 49.6	39.8	66 09.5	28.0					
	22	17 50.6	172 08.4	02.4	143 47.3	37.2	74 51.7	39.7	81 11.8	28.0	Venus	156 32.6	10 30		
	23	32 53.1	187 07.9	03.6	158 47.9	37.7	89 53.8	39.6	96 14.1	28.0	Mars	127 20.6	12 26		
	Mer. Pass. 20 52.8		v -0.5	d 1.2	v -0.6	d 0.4	v -2.1	d 0.1	v -2.3	d 0.0	Jupiter	57 17.1	17 05		
											Saturn	63 29.0	16 40		

G.M.T.		SUN		MOON				Lat.	Twilight		Sun-rise	Moonrise																
		G.H.A.	Dec.	G.H.A.	<i>v</i>	Dec.	<i>d</i>		H.P.	Naut.		Civil	6	7	8	9												
d	h	°	'	°	'	°	'	'	°	h	m	h	m	h	m	h	m											
MONDAY	6 00	184	05.2	S 15	50.6	209	40.3	14.1	S	2	17.3	10.3	55.3	N 72	06	29	07	56	09	36	04	50	06	34	08	25	10	27
	01	199	05.2		51.4	224	13.4	14.2		2	27.6	10.4	55.3	N 70	06	22	07	39	09	01	04	45	06	22	08	04	09	51
	02	214	05.2		52.1	238	46.6	14.1		2	38.0	10.3	55.3	68	06	17	07	26	08	36	04	42	06	13	07	47	09	25
	03	229	05.1	..	52.9	253	19.7	14.1		2	48.3	10.3	55.4	66	06	12	07	15	08	16	04	38	06	05	07	34	09	05
	04	244	05.1		53.6	267	52.8	14.0		2	58.6	10.4	55.4	64	06	07	07	05	08	01	04	36	05	59	07	23	08	50
	05	259	05.1		54.4	282	25.8	14.1		3	09.0	10.3	55.4	62	06	04	06	57	07	48	04	33	05	53	07	14	08	36
	06	274	05.1	S 15	55.1	296	58.9	13.9	S	3	19.3	10.3	55.4	60	06	00	06	50	07	37	04	31	05	48	07	07	08	25
	07	289	05.0		55.9	311	31.8	14.0		3	29.6	10.3	55.5	N 58	05	57	06	44	07	28	04	30	05	44	07	00	08	16
	08	304	05.0		56.6	326	04.8	13.9		3	39.9	10.3	55.5	56	05	54	06	38	07	19	04	28	05	40	06	54	08	08
	09	319	05.0	..	57.4	340	37.7	13.9		3	50.2	10.3	55.5	54	05	51	06	34	07	12	04	27	05	37	06	48	08	00
	10	334	05.0		58.1	355	10.6	13.8		4	00.5	10.3	55.5	52	05	48	06	29	07	05	04	25	05	34	06	43	07	54
	11	349	04.9		58.9	9	43.4	13.8		4	10.8	10.3	55.5	50	05	46	06	25	06	59	04	24	05	31	06	39	07	48
	12	4	04.9	S 15	59.6	24	16.2	13.8	S	4	21.1	10.2	55.6	45	05	40	06	15	06	46	04	22	05	25	06	29	07	35
	13	19	04.9	16	00.4	38	49.0	13.7		4	31.3	10.3	55.6	N 40	05	35	06	07	06	36	04	20	05	20	06	22	07	24
	14	34	04.9		01.1	53	21.7	13.7		4	41.6	10.2	55.6	35	05	30	06	00	06	26	04	18	05	16	06	15	07	15
	15	49	04.8	..	01.9	67	54.4	13.6		4	51.8	10.2	55.6	30	05	25	05	53	06	18	04	16	05	12	06	09	07	08
	16	64	04.8		02.6	82	27.0	13.6		5	02.0	10.3	55.6	20	05	15	05	41	06	04	04	14	05	05	05	59	06	54
	17	79	04.8		03.4	96	59.6	13.6		5	12.3	10.2	55.7	N 10	05	05	05	30	05	52	04	11	05	00	05	50	06	43
	18	94	04.7	S 16	04.1	111	32.2	13.5	S	5	22.5	10.1	55.7	0	04	54	05	18	05	40	04	09	04	54	05	42	06	32
	19	109	04.7		04.9	126	04.7	13.5		5	32.6	10.2	55.7	S 10	04	41	05	06	05	28	04	07	04	49	05	33	06	21
	20	124	04.7		05.6	140	37.2	13.4		5	42.8	10.2	55.7	20	04	25	04	53	05	16	04	05	04	44	05	25	06	09
	21	139	04.7	..	06.4	155	09.6	13.4		5	53.0	10.1	55.8	30	04	05	04	35	05	01	04	02	04	37	05	15	05	56
	22	154	04.6		07.1	169	42.0	13.3		6	03.1	10.1	55.8	35	03	52	04	25	04	52	04	01	04	34	05	09	05	48
	23	169	04.6		07.9	184	14.3	13.3		6	13.2	10.1	55.8	40	03	37	04	13	04	43	03	59	04	30	05	03	05	40
	24													45	03	17	03	58	04	31	03	57	04	25	04	55	05	29
TUESDAY	7 00	184	04.6	S 16	08.6	198	46.6	13.3	S	6	23.3	10.1	55.8	S 50	02	51	03	40	04	17	03	55	04	19	04	46	05	17
	01	199	04.5		09.3	213	18.9	13.2		6	33.4	10.0	55.8	52	02	38	03	31	04	10	03	54	04	17	04	42	05	12
	02	214	04.5		10.1	227	51.1	13.2		6	43.4	10.1	55.9	54	02	23	03	21	04	03	03	53	04	14	04	38	05	06
	03	229	04.5	..	10.8	242	23.3	13.1		6	53.5	10.0	55.9	56	02	04	03	09	03	55	03	51	04	11	04	33	04	59
	04	244	04.4		11.6	256	55.4	13.0		7	03.5	10.0	55.9	58	01	41	02	55	03	45	03	50	04	07	04	27	04	51
	05	259	04.4		12.3	271	27.4	13.1		7	13.5	9.9	55.9	S 60	01	07	02	39	03	35	03	48	04	04	04	21	04	43
	06	274	04.4	S 16	13.1	285	59.5	12.9	S	7	23.4	10.0	56.0	Lat.	Sun-set	Twilight		Moonset										
	07	289	04.3		13.8	300	31.4	12.9		7	33.4	9.9	56.0			Civil	Naut.	6	7	8	9							
	08	304	04.3		14.5	315	03.3	12.9		7	43.3	9.8	56.0	°	h	m	h	m	h	m	h	m	h	m	h	m	h	m
	09	319	04.3	..	15.3	329	35.2	12.8		7	53.1	9.9	56.0	N 72	13	50	15	30	16	57	15	26	15	16	15	04	14	47
	10	334	04.2		16.0	344	07.0	12.8		8	03.0	9.8	56.1	N 70	14	26	15	47	17	04	15	33	15	30	15	27	15	24
	11	349	04.2		16.8	358	38.8	12.7		8	12.8	9.8	56.1	68	14	51	16	00	17	10	15	39	15	41	15	45	15	51
	12	4	04.1	S 16	17.5	13	10.5	12.7	S	8	22.6	9.8	56.1	66	15	10	16	12	17	15	15	43	15	50	15	59	16	11
	13	19	04.1		18.2	27	42.2	12.6		8	32.4	9.7	56.1	64	15	26	16	21	17	19	15	47	15	58	16	10	16	28
	14	34	04.1		19.0	42	13.8	12.6		8	42.1	9.7	56.1	62	15	39	16	29	17	23	15	51	16	04	16	20	16	42
	15	49	04.0	..	19.7	56	45.4	12.5		8	51.8	9.7	56.2	60	15	50	16	36	17	26	15	54	16	10	16	29	16	53
	16	64	04.0		20.4	71	16.9	12.4		9	01.5	9.6	56.2	N 58	15	59	16	42	17	30	15	57	16	15	16	37	17	03
	17	79	04.0		21.2	85	48.3	12.4		9	11.1	9.6	56.2	56	16	07	16	48	17	33	15	59	16	20	16	43	17	12
	18	94	03.9	S 16	21.9	100	19.7	12.4	S	9	20.7	9.6	56.2	54	16	15	16	53	17	36	16	02	16	24	16	49	17	20
	19	109	03.9		22.6	114	51.1	12.3		9	30.3	9.5	56.3	52	16	22	16	58	17	38	16	04	16	28	16	55	17	27
	20	124	03.8		23.4	129	22.4	12.2		9	39.8	9.5	56.3	50	16	28	17	02	17	41	16	05	16	31	17	00	17	33
	21	139	03.8	..	24.1	143	53.6	12.2		9	49.3	9.4	56.3	45	16	41	17	12	17	47	16	10	16	38	17	10	17	47
	22	154	03.8		24.8	158	24.8	12.1		9	58.7	9.4	56.3	N 40	16	52	17	20	17	52	16	13	16	45	17	19	17	58
	23	169	03.7		25.6	172	55.9	12.1		10	08.1	9.4	56.4	35	17	01	17	27	17	57	16	16	16	50	17	27	18	08
	WEDNESDAY	8 00	184	03.7	S 16	26.3	187	27.0	12.0	S 10	17.5	9.3	56.4	30	17	09	17	34	18	02	16	18	16	55	17	34	18	16
01		199	03.6		27.0	201	58.0	12.0		10	26.8	9.3	56.4	20	17	23	17	46	18	12	16	23	17	03	17	45	18	31
02		214	03.6		27.8	216	29.0	11.8		10	36.1	9.2	56.4	N 10	17	35	17	57	18	22	16	27	17	10	17	56	18	44
03		229	03.6	..	28.5	230	59.8	11.9		10	45.3	9.2	56.4	0	17	47	18											

		ARIES			VENUS -3.4			MARS +1.7			JUPITER -1.8			SATURN +0.8			STARS		
G.M.T.		G.H.A.	G.H.A.	Dec.	G.H.A.	Dec.	G.H.A.	Dec.	G.H.A.	Dec.	G.H.A.	Dec.	G.H.A.	Dec.	Name	S.H.A.	Dec.		
d	h																		
T H U R S D A Y	9 00	47 55.5	202 07.4	S 9 04.7	173 48.5	S19 38.1	104 55.9	S20 39.6	111 16.4	S21 28.0	Acamar	315 47.6	S 40 27.5						
	01	62 58.0	217 07.0	05.9	188 49.2	38.6	119 58.1	39.5	126 18.7	27.9	Acarnar	335 55.3	S 57 26.0						
	02	78 00.5	232 06.5	07.0	203 49.8	39.0	135 00.2	39.4	141 20.9	27.9	Acrux	173 53.5	S 62 52.9						
	03	93 02.9	247 06.0	08.2	218 50.4	39.4	150 02.3	39.3	156 23.2	27.9	Adhara	255 43.0	S 28 55.0						
	04	108 05.4	262 05.5	09.3	233 51.1	39.9	165 04.4	39.3	171 25.5	27.8	Aldebaran	291 33.9	N 16 26.0						
	05	123 07.8	277 05.1	10.5	248 51.7	40.3	180 06.5	39.2	186 27.8	27.8									
	06	138 10.3	292 04.6	S 9 11.6	263 52.3	S19 40.8	195 08.6	S20 39.1	201 30.1	S21 27.8	Alioth	166 55.5	N 56 10.0						
	07	153 12.8	307 04.1	12.8	278 53.0	41.2	210 10.7	39.0	216 32.4	27.8	Alkaid	153 30.1	N 49 30.3						
	08	168 15.2	322 03.6	13.9	293 53.6	41.6	225 12.8	39.0	231 34.7	27.7	Al Na'ir	28 32.7	S 47 09.0						
	09	183 17.7	337 03.1	15.1	308 54.2	42.1	240 14.9	38.9	246 37.0	27.7	Alnilam	276 25.8	S 1 13.5						
	10	198 20.2	352 02.7	16.2	323 54.8	42.5	255 17.0	38.8	261 39.3	27.7	Alphard	218 34.5	S 8 29.4						
	11	213 22.6	7 02.2	17.3	338 55.5	42.9	270 19.1	38.7	276 41.5	27.7									
	12	228 25.1	22 01.7	S 9 18.5	353 56.1	S19 43.4	285 21.2	S20 38.7	291 43.8	S21 27.6	Alphecca	126 44.5	N 26 50.8						
	13	243 27.6	37 01.2	19.6	8 56.7	43.8	300 23.4	38.6	306 46.1	27.6	Alpheratz	358 23.7	N 28 52.9						
	14	258 30.0	52 00.7	20.8	23 57.4	44.2	315 25.5	38.5	321 48.4	27.6	Altair	62 46.5	N 8 46.2						
	15	273 32.5	67 00.3	21.9	38 58.0	44.7	330 27.6	38.4	336 50.7	27.5	Ankaa	353 53.9	S 42 30.9						
	16	288 35.0	81 59.8	23.1	53 58.6	45.1	345 29.7	38.4	351 53.0	27.5	Antares	113 14.6	S 26 20.8						
17	303 37.4	96 59.3	24.2	68 59.2	45.6	0 31.8	38.3	6 55.3	27.5										
F R I D A Y	18	318 39.9	111 58.8	S 9 25.4	83 59.9	S19 46.0	15 33.9	S20 38.2	21 57.5	S21 27.5	Arcturus	146 31.7	N 19 23.0						
	19	333 42.3	126 58.3	26.5	99 00.5	46.4	30 36.0	38.1	36 59.8	27.4	Atria	108 52.0	S 68 57.6						
	20	348 44.8	141 57.8	27.7	114 01.1	46.9	45 38.1	38.1	52 02.1	27.4	Avior	234 33.8	S 59 22.9						
	21	3 47.3	156 57.4	28.8	129 01.8	47.3	60 40.2	38.0	67 04.4	27.4	Bellatrix	279 13.7	N 6 18.9						
	22	18 49.7	171 56.9	29.9	144 02.4	47.7	75 42.3	37.9	82 06.7	27.3	Betelgeuse	271 43.3	N 7 24.0						
	23	33 52.2	186 56.4	31.1	159 03.0	48.2	90 44.4	37.8	97 09.0	27.3									
	10 00	48 54.7	201 55.9	S 9 32.2	174 03.6	S19 48.6	105 46.5	S20 37.8	112 11.3	S21 27.3	Canopus	264 13.1	S 52 40.3						
	01	63 57.1	216 55.4	33.4	189 04.3	49.0	120 48.6	37.7	127 13.5	27.3	Capella	281 31.8	N 45 57.5						
	02	78 59.6	231 54.9	34.5	204 04.9	49.5	135 50.7	37.6	142 15.8	27.2	Deneb	49 58.2	N 45 08.9						
	03	94 02.1	246 54.4	35.6	219 05.5	49.9	150 52.8	37.5	157 18.1	27.2	Denebola	183 13.7	N 14 47.2						
	04	109 04.5	261 54.0	36.8	234 06.1	50.3	165 54.9	37.5	172 20.4	27.2	Diphda	349 34.8	S 18 11.8						
	05	124 07.0	276 53.5	37.9	249 06.8	50.7	180 57.0	37.4	187 22.7	27.2									
	06	139 09.5	291 53.0	S 9 39.1	264 07.4	S19 51.2	195 59.1	S20 37.3	202 25.0	S21 27.1	Dubhe	194 39.9	N 61 57.3						
	07	154 11.9	306 52.5	40.2	279 08.0	51.6	211 01.2	37.2	217 27.3	27.1	Elnath	279 01.7	N 28 34.5						
	08	169 14.4	321 52.0	41.3	294 08.6	52.0	226 03.3	37.1	232 29.5	27.1	Eltanin	91 04.7	N 51 29.9						
	09	184 16.8	336 51.5	42.5	309 09.2	52.5	241 05.4	37.1	247 31.8	27.0	Enif	34 25.4	N 9 42.1						
	10	199 19.3	351 51.0	43.6	324 09.9	52.9	256 07.5	37.0	262 34.1	27.0	Fomalhaut	16 06.9	S 29 49.6						
11	214 21.8	6 50.5	44.8	339 10.5	53.3	271 09.6	36.9	277 36.4	27.0										
12	229 24.2	21 50.1	S 9 45.9	354 11.1	S19 53.8	286 11.7	S20 36.8	292 38.7	S21 27.0	Gacrux	172 44.9	S 56 53.7							
13	244 26.7	36 49.6	47.0	9 11.7	54.2	301 13.8	36.8	307 41.0	26.9	Gienah	176 32.8	S 17 19.6							
14	259 29.2	51 49.1	48.2	24 12.4	54.6	316 15.9	36.7	322 43.2	26.9	Hadar	149 44.0	S 60 11.1							
15	274 31.6	66 48.6	49.3	39 13.0	55.0	331 18.0	36.6	337 45.5	26.9	Hamal	328 44.5	N 23 17.0							
16	289 34.1	81 48.1	50.5	54 13.6	55.5	346 20.1	36.5	352 47.8	26.8	Kaus Aust.	84 35.9	S 34 24.2							
17	304 36.6	96 47.6	51.6	69 14.2	55.9	1 22.2	36.5	7 50.1	26.8										
18	319 39.0	111 47.1	S 9 52.7	84 14.8	S19 56.3	16 24.3	S20 36.4	22 52.4	S21 26.8	Kochab	137 19.6	N 74 18.8							
19	334 41.5	126 46.6	53.9	99 15.5	56.7	31 26.4	36.3	37 54.7	26.8	Markab	14 17.1	N 15 00.1							
20	349 44.0	141 46.1	55.0	114 16.1	57.2	46 28.5	36.2	52 56.9	26.7	Menkar	314 55.6	N 3 56.4							
21	4 46.4	156 45.6	56.1	129 16.7	57.6	61 30.6	36.1	67 59.2	26.7	Menkent	148 54.1	S 36 10.7							
22	19 48.9	171 45.1	57.3	144 17.3	58.0	76 32.7	36.1	83 01.5	26.7	Miaplacidus	221 47.9	S 69 33.3							
23	34 51.3	186 44.6	58.4	159 17.9	58.4	91 34.8	36.0	98 03.8	26.6										
S A T U R D A Y	11 00	49 53.8	201 44.2	S 9 59.5	174 18.6	S19 58.9	106 36.9	S20 35.9	113 06.1	S21 26.6	Mirfak	309 35.8	N 49 43.5						
	01	64 56.3	216 43.7	10 00.7	189 19.2	59.3	121 39.0	35.8	128 08.4	26.6	Nunki	76 46.9	S 26 20.7						
	02	79 58.7	231 43.2	01.8	204 19.8	59.7	136 41.1	35.8	143 10.6	26.6	Peacock	54 20.9	S 56 51.7						
	03	95 01.2	246 42.7	02.9	219 20.4	60.1	151 43.2	35.7	158 12.9	26.5	Pollux	244 15.3	N 28 07.0						
	04	110 03.7	261 42.2	04.1	234 21.0	60.6	166 45.3	35.6	173 15.2	26.5	Procyon	245 40.5	N 5 19.4						
	05	125 06.1	276 41.7	05.2	249 21.7	61.0	181 47.4	35.5	188 17.5	26.5									
	06	140 08.6	291 41.2	S10 06.3	264 22.3	S20 01.4	196 49.5	S20 35.4	203 19.8	S21 26.4	Rasalhague	96 43.0	N 12 35.4						
	07	155 11.1	306 40.7	07.5	279 22.9	01.8	211 51.6	35.4	218 22.0	26.4	Regulus	208 25.2	N 12 09.3						
	08	170 13.5	321 40.2	08.6	294 23.5	02.3	226 53.7	35.3	233 24.3	26.4	Rigel	281 49.3	S 8 14.7						
	09	185 16.0	336 39.7	09.7	309 24.1	02.7	241 55.8	35.2	248 26.6	26.4	Rigel Kent.	140 45.8	S 60 40.4						
	10	200 18.4	351 39.2	10.8	324 24.7	03.1	256 57.9	35.1	263 28.9	26.3	Sabik	102 57.7	S 15 40.6						
	11	215 20.9	6 38.7	12.0	339 25.4	03.5	272 00.0	35.1	278 31.2	26.3									
	12	230 23.4	21 38.2	S10 13.1	354 26.0	S20 04.0	287 02.1	S20 35.0	293 33.5	S21 26.3	Schedar	350 24.6	N 56 19.8						
	13	245 25.8	36 37.7	14.2	9 26.6	04.4	302 04.2	34.9	308 35.7	26.2	Shaula	97 15.3	S 37 04.6						
	14	260 28.3	51 37.2	15.4	24 27.2	04.8	317 06.3	34.8	323 38.0	26.2	Sirius	259 08.0	S 16 39.7						
	15	275 30.8	66 36.7	16.5	39 27.8	05.2	332 08.4	34.7	338 40.3	26.2	Spica	159 12.7	S 10 57.5						
	16	290 33.2	81 36.2	17.6	54 28.4	05.6	347 10.5	34.7	353 42.6	26.1	Suhail	223 21.2	S 43 16.4						
17	305 35.7	96 35.7	18.7	69 29.0	06.1	2 12.5	34.6	8 44.9	26.1										
18	320 38.2	111 35.2	S10 19.9	84 29.7	S20 06.5	17 14.6	S20 34.5	23 47.1	S21 26.1	Vega	81 05.7	N 38 45.2							
19	335 40.6	126 34.7	21.0	99 30.3	06.9	32 16.7	34.4	38 49.4	26.1	Zuben'ubi	137 49.1	S 15 52.8							
20	350 43.1	141 34.2	22.1	114 30.9	07.3	47 18.8	34.3	53 51.7	26.0										
21	5 45.6	156 33.7	23.2	129 31.5	07.7	62 20.9	34.3	68 54.0	26.0										
22	20 48.0	171 33.2	24.4	144 32.1	08.2	77 23.0	34.2	83 56.2	26.0										
23	35 50.5	186 32.7	25.5	159 32.7	08.6	92 25.1	34.1	98 58.5	25.9										
Mer. Pass.		h m	v -0.5	d 1.1	v 0.6	d 0.4	v 2.1	d 0.1	v 2.3	d 0.0									
											Venus	153 01.2	10 33						
											Mars	125 08.9	12 23						
											Jupiter	56 51.8	16 55						
											Saturn	63 16.6	16 29						

G.M.T.		SUN		MOON				Lat.	Twilight		Sun- rise	Moonrise								
		G.H.A.	Dec.	G.H.A.	°	Dec.	d		H.P.	Naut.		Civil	9	10	11	12				
d	h	°	'	°	'	°	'	°	'	h	m	h	m	h	m	h	m	h	m	
9	00	184	02.6	S16	43.7	175	34.8	10.6	S13	47.2	8.0	56.9	N 72	06 40	08 10	10 00	10 27	■	■	
	01	199	02.6		44.5	190	04.4	10.5		13 55.2	7.9	56.9	N 70	06 32	07 51	09 18	09 51	11 42	13 35	
	02	214	02.5		45.2	204	33.9	10.4	14	03.1	7.9	57.0	68	06 26	07 36	08 49	09 25	11 02	12 31	
	03	229	02.5	..	45.9	219	03.3	10.4	14	11.0	7.8	57.0	66	06 20	07 24	08 28	09 05	10 34	11 55	
	04	244	02.4		46.6	233	32.7	10.3	14	18.8	7.7	57.0	64	06 15	07 14	08 11	08 50	10 13	11 30	
	05	259	02.3		47.3	248	02.0	10.2	14	26.5	7.7	57.0	62	06 10	07 05	07 57	08 36	09 57	11 10	
	06	274	02.3	S16	48.1	262	31.2	10.2	S14	34.2	7.6	57.1	N 58	06 03	06 50	07 35	08 16	09 31	10 40	
	07	289	02.2		48.8	277	00.4	10.1	14	41.8	7.5	57.1	56	05 59	06 44	07 26	08 08	09 20	10 28	
	08	304	02.2		49.5	291	29.5	10.1	14	49.3	7.5	57.1	54	05 56	06 39	07 18	08 00	09 11	10 18	
	09	319	02.1	..	50.2	305	58.6	10.0	14	56.8	7.3	57.1	52	05 53	06 34	07 11	07 54	09 03	10 09	
	10	334	02.1		50.9	320	27.6	9.9	15	04.1	7.3	57.1	50	05 50	06 29	07 04	07 48	08 56	10 01	
	11	349	02.0		51.6	334	56.5	9.9	15	11.4	7.2	57.2	45	05 44	06 19	06 50	07 35	08 40	09 43	
	12	4	02.0	S16	52.3	349	25.4	9.8	S15	18.6	7.2	57.2	N 40	05 38	06 10	06 39	07 24	08 27	09 29	
	13	19	01.9		53.1	3	54.2	9.7	15	25.8	7.0	57.2	35	05 32	06 03	06 29	07 15	08 17	09 17	
	14	34	01.9		53.8	18	22.9	9.7	15	32.8	7.0	57.2	30	05 27	05 56	06 21	07 08	08 08	09 07	
	15	49	01.8	..	54.5	32	51.6	9.6	15	39.8	6.9	57.2	20	05 16	05 43	06 06	06 54	07 51	08 49	
	16	64	01.8		55.2	47	20.2	9.6	15	46.7	6.8	57.3	N 10	05 06	05 31	05 53	06 43	07 37	08 33	
	17	79	01.7		55.9	61	48.8	9.5	15	53.5	6.7	57.3	0	04 54	05 19	05 40	06 32	07 24	08 19	
	18	94	01.7	S16	56.6	76	17.3	9.4	S16	00.2	6.7	57.3	S 10	04 40	05 06	05 28	06 21	07 11	08 04	
	19	109	01.6		57.3	90	45.7	9.4	16	06.9	6.5	57.3	20	04 24	04 51	05 15	06 09	06 57	07 49	
	20	124	01.5		58.0	105	14.1	9.3	16	13.4	6.5	57.4	30	04 02	04 33	04 59	05 56	06 41	07 31	
	21	139	01.5	..	58.8	119	42.4	9.2	16	19.9	6.4	57.4	35	03 49	04 22	04 50	05 48	06 32	07 21	
	22	154	01.4		59.5	134	10.6	9.2	16	26.3	6.3	57.4	40	03 33	04 10	04 39	05 40	06 21	07 09	
23	169	01.4		17 00.2	148	38.8	9.2	16	32.6	6.2	57.4	45	03 12	03 54	04 27	05 29	06 09	06 55		
10	00	184	01.3	S17	00.9	163	07.0	9.0	S16	38.8	6.1	57.4	S 50	02 45	03 34	04 12	05 17	05 54	06 38	
	01	199	01.3		01.6	177	35.0	9.0	16	44.9	6.1	57.5	52	02 31	03 25	04 05	05 12	05 47	06 30	
	02	214	01.2		02.3	192	03.0	9.0	16	51.0	5.9	57.5	54	02 14	03 14	03 57	05 06	05 40	06 21	
	03	229	01.1	..	03.0	206	31.0	8.9	16	56.9	5.8	57.5	56	01 54	03 02	03 49	04 59	05 31	06 12	
	04	244	01.1		03.7	220	58.9	8.8	17	02.7	5.8	57.5	58	01 27	02 47	03 39	04 51	05 21	06 01	
	05	259	01.0		04.4	235	26.7	8.8	17	08.5	5.7	57.5	S 60	00 44	02 29	03 27	04 43	05 10	05 48	
	06	274	01.0	S17	05.1	249	54.5	8.7	S17	14.2	5.5	57.6								
	07	289	00.9		05.8	264	22.2	8.7	17	19.7	5.5	57.6	Lat.	Sun- set	Twilight Civil	Naut.	Moonset			
	08	304	00.8		06.5	278	49.9	8.6	17	25.2	5.4	57.6					9	10	11	12
	09	319	00.8	..	07.2	293	17.5	8.6	17	30.6	5.2	57.6	°	h m	h m	h m	h m	h m	h m	h m
	10	334	00.7		07.9	307	45.1	8.5	17	35.8	5.2	57.6	N 72	13 26	15 17	16 46	14 47	■	■	■
	11	349	00.7		08.6	322	12.6	8.4	17	41.0	5.1	57.7	N 70	14 09	15 36	16 54	15 24	15 23	15 25	16 09
	12	4	00.6	S17	09.3	336	40.0	8.4	S17	46.1	4.9	57.7	68	14 38	15 51	17 01	15 51	16 04	16 30	17 23
	13	19	00.5		10.0	351	07.4	8.4	17	51.0	4.9	57.7	66	14 59	16 03	17 07	16 11	16 32	17 06	18 00
	14	34	00.5		10.7	5	34.8	8.2	17	55.9	4.8	57.7	64	15 17	16 13	17 12	16 28	16 53	17 31	18 26
	15	49	00.4	..	11.4	20	02.0	8.3	18	00.7	4.7	57.7	62	15 31	16 22	17 17	16 42	17 10	17 51	18 47
	16	64	00.3		12.1	34	29.3	8.2	18	05.4	4.5	57.8	60	15 43	16 30	17 21	16 53	17 25	18 07	19 04
	17	79	00.3		12.8	48	56.5	8.1	18	09.9	4.5	57.8	N 58	15 53	16 37	17 24	17 03	17 37	18 21	19 17
	18	94	00.2	S17	13.5	63	23.6	8.1	S18	14.4	4.3	57.8	56	16 02	16 43	17 28	17 12	17 48	18 33	19 30
	19	109	00.1		14.2	77	50.7	8.0	18	18.7	4.3	57.8	54	16 10	16 48	17 31	17 20	17 57	18 44	19 40
	20	124	00.1		14.9	92	17.7	8.0	18	23.0	4.1	57.8	52	16 17	16 53	17 34	17 27	18 06	18 53	19 50
	21	139	00.0	..	15.6	106	44.7	7.9	18	27.1	4.1	57.8	50	16 23	16 58	17 37	17 33	18 13	19 01	19 58
	22	153	59.9		16.3	121	11.6	7.9	18	31.2	3.9	57.9	45	16 37	17 08	17 43	17 47	18 29	19 19	20 16
23	168	59.9		17.0	135	38.5	7.8	18	35.1	3.8	57.9									
11	00	183	59.8	S17	17.7	150	05.3	7.8	S18	38.9	3.7	57.9	N 40	16 49	17 17	17 49	17 58	18 43	19 33	
	01	198	59.7		18.4	164	32.1	7.8	18	42.6	3.6	57.9	35	16 58	17 25	17 55	18 08	18 54	19 46	
	02	213	59.7		19.1	178	58.9	7.7	18	46.2	3.5	57.9	30	17 07	17 32	18 01	18 16	19 04	19 56	
	03	228	59.6	..	19.8	193	25.6	7.7	18	49.7	3.4	58.0	20	17 22	17 45	18 11	18 31	19 21	20 15	
	04	243	59.5		20.5	207	52.3	7.6	18	53.1	3.2	58.0	N 10	17 35	17 57	18 22	18 44	19 36	20 31	
	05	258	59.5		21.2	222	18.9	7.5	18	56.3	3.2	58.0	0	17 47	18 09	18 34	18 56	19 50	20 46	
	06	273	59.4	S17	21.9	236	45.4	7.6	S18	59.5	3.0	58.0	S 10	18 00	18 22	18 48	19 08	20 04	21 00	
	07	288	59.3		22.6	251	12.0	7.5	19	02.5	3.0	58.0	20	18 14	18 37	19 05	19 22	20 19	21 17	
	08	303	59.3		23.3	265	38.5	7.4	19	05.5	2.8	58.0	30	18 29	18 55	19 26	19 36	20 36	21 35	
	09	318	59.2	..	24.0	280	04.9	7.4	19	08.3	2.7	58.1	35	18 39	19 06	19 40	19 45	20 46	21 45	
	10	333	59.1		24.7	294	31.3	7.4	19	11.0	2.5	58.1	40	18 49	19 19	19 56	19 55	20 57	21 57	
	11	348	59.1		25.4	308	57.7	7.4	19	13.5	2.5	58.1	45	19 02	19 35	20 17	20 06	21 10	22 12	
	12	3	59.0	S17	26.1	323	24.1	7.3	S19	16.0	2.3	58.1	S 50	19 17						

		ARIES		VENUS -3.4		MARS +1.7		JUPITER -1.8		SATURN +0.8		STARS		
G.M.T.		G.H.A.		G.H.A. Dec.		G.H.A. Dec.		G.H.A. Dec.		G.H.A. Dec.		Name	S.H.A.	Dec.
SUNDAY	12 ^d 00 ^h	50 52.9	201 32.2	S10 26.6	174 33.3	S20 09.0	107 27.2	S20 34.0	114 00.8	S21 25.9	Acamar	315 47.6	S 40 27.5	
	01	65 55.4	216 31.7	27.7	189 34.0	09.4	122 29.3	34.0	129 03.1	25.9	Achernar	335 55.3	S 57 26.0	
	02	80 57.9	231 31.2	28.9	204 34.6	09.8	137 31.4	33.9	144 05.4	25.8	Acrux	173 53.5	S 62 52.9	
	03	96 00.3	246 30.7	.. 30.0	219 35.2	.. 10.3	152 33.5	.. 33.8	159 07.6	.. 25.8	Adhara	255 43.0	S 28 55.0	
	04	111 02.8	261 30.2	31.1	234 35.8	10.7	167 35.6	33.7	174 09.9	25.8	Aldebaran	291 33.9	N 16 26.0	
	05	126 05.3	276 29.7	32.2	249 36.4	11.1	182 37.7	33.6	189 12.2	25.8				
	06	141 07.7	291 29.2	S10 33.4	264 37.0	S20 11.5	197 39.8	S20 33.6	204 14.5	S21 25.7	Alioth	166 55.4	N 56 10.0	
	07	156 10.2	306 28.7	34.5	279 37.6	11.9	212 41.8	33.5	219 16.8	25.7	Alkaid	153 30.1	N 49 30.3	
	08	171 12.7	321 28.2	35.6	294 38.2	12.3	227 43.9	33.4	234 19.0	25.7	Al Na'ir	28 32.7	S 47 09.0	
	09	186 15.1	336 27.7	.. 36.7	309 38.8	.. 12.8	242 46.0	.. 33.3	249 21.3	.. 25.6	Alnilam	276 25.7	S 1 13.5	
	10	201 17.6	351 27.2	37.8	324 39.5	13.2	257 48.1	33.2	264 23.6	25.6	Alphard	218 34.5	S 8 29.4	
	11	216 20.1	6 26.6	39.0	339 40.1	13.6	272 50.2	33.2	279 25.9	25.6				
	12	231 22.5	21 26.1	S10 40.1	354 40.7	S20 14.0	287 52.3	S20 33.1	294 28.1	S21 25.6	Alphecca	126 44.5	N 26 50.7	
	13	246 25.0	36 25.6	41.2	9 41.3	14.4	302 54.4	33.0	309 30.4	25.5	Alpheratz	358 23.7	N 28 52.9	
	14	261 27.4	51 25.1	42.3	24 41.9	14.8	317 56.5	32.9	324 32.7	25.5	Altair	62 46.5	N 8 46.2	
	15	276 29.9	66 24.6	.. 43.4	39 42.5	.. 15.2	332 58.6	.. 32.8	339 35.0	.. 25.5	Ankaa	353 53.9	S 42 30.9	
	16	291 32.4	81 24.1	44.5	54 43.1	15.7	348 00.6	32.8	354 37.2	25.4	Antares	113 14.6	S 26 20.7	
	17	306 34.8	96 23.6	45.7	69 43.7	16.1	3 02.7	32.7	9 39.5	25.4				
	18	321 37.3	111 23.1	S10 46.8	84 44.3	S20 16.5	18 04.8	S20 32.6	24 41.8	S21 25.4	Arcturus	146 31.7	N 19 23.0	
	19	336 39.8	126 22.6	47.9	99 44.9	16.9	33 06.9	32.5	39 44.1	25.3	Atria	108 52.0	S 68 57.5	
	20	351 42.2	141 22.1	49.0	114 45.5	17.3	48 09.0	32.4	54 46.3	25.3	Avior	234 33.8	S 59 22.9	
	21	6 44.7	156 21.6	.. 50.1	129 46.1	.. 17.7	63 11.1	.. 32.4	69 48.6	.. 25.3	Bellatrix	279 13.6	N 6 18.9	
	22	21 47.2	171 21.0	51.2	144 46.8	18.1	78 13.2	32.3	84 50.9	25.3	Betelgeuse	271 43.3	N 7 24.0	
	23	36 49.6	186 20.5	52.4	159 47.4	18.5	93 15.3	32.2	99 53.2	25.2				
MONDAY	13 ^d 00 ^h	51 52.1	201 20.0	S10 53.5	174 48.0	S20 19.0	108 17.3	S20 32.1	114 55.4	S21 25.2	Canopus	264 13.1	S 52 40.3	
	01	66 54.6	216 19.5	54.6	189 48.6	19.4	123 19.4	32.0	129 57.7	25.2	Capella	281 31.8	N 45 57.5	
	02	81 57.0	231 19.0	55.7	204 49.2	19.8	138 21.5	32.0	145 00.0	25.1	Deneb	49 58.2	N 45 08.9	
	03	96 59.5	246 18.5	.. 56.8	219 49.8	.. 20.2	153 23.6	.. 31.9	160 02.3	.. 25.1	Denebola	183 13.7	N 14 47.2	
	04	112 01.9	261 18.0	57.9	234 50.4	20.6	168 25.7	31.8	175 04.5	25.1	Diphda	349 34.8	S 18 11.8	
	05	127 04.4	276 17.5	10 59.0	249 51.0	21.0	183 27.8	31.7	190 06.8	25.0				
	06	142 06.9	291 16.9	S11 00.1	264 51.6	S20 21.4	198 29.8	S20 31.6	205 09.1	S21 25.0	Dubhe	194 39.9	N 61 57.3	
	07	157 09.3	306 16.4	01.3	279 52.2	21.8	213 31.9	31.6	220 11.4	25.0	Elnath	279 01.7	N 28 34.5	
	08	172 11.8	321 15.9	02.4	294 52.8	22.2	228 34.0	31.5	235 13.6	25.0	Eltanin	91 04.7	N 51 29.9	
	09	187 14.3	336 15.4	.. 03.5	309 53.4	.. 22.6	243 36.1	.. 31.4	250 15.9	.. 24.9	Enif	34 25.5	N 9 42.1	
	10	202 16.7	351 14.9	04.6	324 54.0	23.1	258 38.2	31.3	265 18.2	24.9	Fomalhaut	16 06.9	S 29 49.6	
	11	217 19.2	6 14.4	05.7	339 54.6	23.5	273 40.3	31.2	280 20.5	24.9				
	12	232 21.7	21 13.9	S11 06.8	354 55.2	S20 23.9	288 42.4	S20 31.2	295 22.7	S21 24.8	Gacrux	172 44.9	S 56 53.6	
	13	247 24.1	36 13.3	07.9	9 55.8	24.3	303 44.4	31.1	310 25.0	24.8	Gienah	176 32.7	S 17 19.6	
	14	262 26.6	51 12.8	09.0	24 56.4	24.7	318 46.5	31.0	325 27.3	24.8	Hadar	149 44.0	S 60 11.1	
	15	277 29.0	66 12.3	.. 10.1	39 57.0	.. 25.1	333 48.6	.. 30.9	340 29.6	.. 24.7	Hamal	328 44.5	N 23 17.0	
	16	292 31.5	81 11.8	11.2	54 57.6	25.5	348 50.7	30.8	355 31.8	24.7	Kaus Aust.	84 35.9	S 34 24.2	
	17	307 34.0	96 11.3	12.3	69 58.2	25.9	3 52.8	30.7	10 34.1	24.7				
	18	322 36.4	111 10.7	S11 13.5	84 58.8	S20 26.3	18 54.8	S20 30.7	25 36.4	S21 24.7	Kochab	137 19.6	N 74 18.8	
	19	337 38.9	126 10.2	14.6	99 59.4	26.7	33 56.9	30.6	40 38.6	24.6	Markab	14 17.1	N 15 00.1	
	20	352 41.4	141 09.7	15.7	115 00.0	27.1	48 59.0	30.5	55 40.9	24.6	Menkar	314 55.6	N 3 56.4	
	21	7 43.8	156 09.2	.. 16.8	130 00.6	.. 27.5	64 01.1	.. 30.4	70 43.2	.. 24.6	Menkent	148 54.1	S 36 10.7	
	22	22 46.3	171 08.7	17.9	145 01.2	27.9	79 03.2	30.3	85 45.5	24.5	Miaplacidus	221 47.9	S 69 33.3	
	23	37 48.8	186 08.1	19.0	160 01.8	28.3	94 05.3	30.3	100 47.7	24.5				
TUESDAY	14 ^d 00 ^h	52 51.2	201 07.6	S11 20.1	175 02.4	S20 28.7	109 07.3	S20 30.2	115 50.0	S21 24.5	Mirfak	309 35.8	N 49 43.5	
	01	67 53.7	216 07.1	21.2	190 03.1	29.1	124 09.4	30.1	130 52.3	24.4	Nunki	76 47.0	S 26 20.7	
	02	82 56.2	231 06.6	22.3	205 03.6	29.5	139 11.5	30.0	145 54.5	24.4	Peacock	54 20.9	S 56 51.7	
	03	97 58.6	246 06.1	.. 23.4	220 04.2	.. 29.9	154 13.6	.. 29.9	160 56.8	.. 24.4	Pollux	244 15.3	N 28 07.0	
	04	113 01.1	261 05.5	24.5	235 04.8	30.3	169 15.7	29.8	175 59.1	24.3	Procyon	245 40.5	N 5 19.4	
	05	128 03.5	276 05.0	25.6	250 05.4	30.7	184 17.7	29.8	191 01.4	24.3				
	06	143 06.0	291 04.5	S11 26.7	265 06.0	S20 31.2	199 19.8	S20 29.7	206 03.6	S21 24.3	Rasalhague	96 43.0	N 12 35.4	
	07	158 08.5	306 04.0	27.8	280 06.6	31.6	214 21.9	29.6	221 05.9	24.3	Regulus	208 25.1	N 12 09.3	
	08	173 10.9	321 03.4	28.9	295 07.2	32.0	229 24.0	29.5	236 08.2	24.2	Rigel	281 49.3	S 8 14.7	
	09	188 13.4	336 02.9	.. 30.0	310 07.8	.. 32.4	244 26.0	.. 29.4	251 10.4	.. 24.2	Rigel Kent.	140 45.8	S 60 40.4	
	10	203 15.9	351 02.4	31.1	325 08.4	32.8	259 28.1	29.4	266 12.7	24.2	Sabik	102 57.7	S 15 40.6	
	11	218 18.3	6 01.9	32.2	340 09.0	33.2	274 30.2	29.3	281 15.0	24.1				
	12	233 20.8	21 01.3	S11 33.3	355 09.6	S20 33.6	289 32.3	S20 29.2	296 17.3	S21 24.1	Schedar	350 24.6	N 56 19.8	
	13	248 23.3	36 00.8	34.4	10 10.2	34.0	304 34.4	29.1	311 19.5	24.1	Shaula	97 15.4	S 37 04.6	
	14	263 25.7	51 00.3	35.5	25 10.8	34.4	319 36.4	29.0	326 21.8	24.0	Sirius	259 08.0	S 16 39.7	
	15	278 28.2	65 59.8	.. 36.6	40 11.4	.. 34.8	334 38.5	.. 28.9	341 24.1	.. 24.0	Spica	159 12.7	S 10 57.5	
	16	293 30.7	80 59.2	37.7	55 12.0	35.2	349 40.6	28.9	356 26.3	24.0	Suhail	223 21.1	S 43 16.4	
	17	308 33.1	95 58.7	38.8	70 12.6	35.6	4 42.7	28.8	11 28.6	23.9				
	18	323 35.6	110 58.2	S11 39.9	85 13.2	S20 35.9	19 44.7	S20 28.7	26 30.9	S21 23.9	Vega	81 05.7	N 38 45.1	
	19	338 38.0	125 57.6	41.0	100 13.8	36.3	34 46.8	28.6	41 33.1	23.9	Zuben'ubi	137 49.1	S 15 52.8	
	20	353 40.5	140 57.1	42.0	115 14.4	36.7	49 48.9	28.5	56 35.4	23.8				
	21	8 43.0	155 56.6	.. 43.1	130 15.0	.. 37.1	64 51.0	.. 28.4	71 37.7	.. 23.8				
	22	23 45.4	170 56.1	44.2	145 15.6	37.5	79 53.0	28.4	86 39.9	23.8	Venus	149 27.9	10 35	
	23	38 47.9	185 55.5	45.3	160 16.2	37.9	94 55.1	28.3	101 42.2	23.8	Mars	122 55.9	12 20	
Mer. Pass. 20 29.2		v -0.5 d 1.1		v 0.6 d 0.4		v 2.1 d 0.1		v 2.3 d 0.0		v 2.3 d 0.0		Jupiter		16 45
												Saturn		16 18

G.M.T.	SUN				MOON				Lat.	Twilight		Sun-rise	Moonrise			
										Naut.	Civil		12	13	14	15
	G.H.A.	Dec.	G.H.A.	<i>v</i>	Dec.	<i>d</i>	H.P.	<i>h m</i>								
<i>d h</i>	<i>° ' "</i>	<i>° ' "</i>	<i>° ' "</i>		<i>° ' "</i>	<i>' "</i>	<i>' "</i>	<i>°</i>	<i>°</i>	<i>h m</i>	<i>h m</i>	<i>h m</i>	<i>h m</i>	<i>h m</i>	<i>h m</i>	<i>h m</i>
SUNDAY	12 00	183 58.1 S17 34.3	136 37.7 6.9	S19 36.3	0.9	58.3		N 72	06 51	08 24	10 30	■	■	15 47	15 23	
	01	198 58.0 35.0	151 03.6 7.0	19 37.2	0.8	58.3		N 70	06 42	08 03	09 35	14 50	15 00	15 00	14 57	
	02	213 58.0 35.7	165 29.6 6.9	19 38.0	0.7	58.3		68	06 35	07 47	09 03	13 36	14 12	14 29	14 37	
	03	228 57.9 . 36.3	179 55.5 6.9	19 38.7	0.5	58.3		66	06 28	07 33	08 39	12 59	13 40	14 06	14 22	
	04	243 57.8 37.0	194 21.4 6.9	19 39.2	0.4	58.4		64	06 22	07 22	08 20	12 32	13 17	13 48	14 09	
	05	258 57.7 37.7	208 47.3 6.8	19 39.6	0.3	58.4		62	06 17	07 12	08 05	12 12	12 59	13 33	13 58	
	06	273 57.6 S17 38.4	223 13.1 6.8	S19 39.9	0.2	58.4		60	06 13	07 04	07 52	11 55	12 43	13 20	13 48	
	07	288 57.6 39.1	237 38.9 6.9	19 40.1	0.0	58.4		N 58	06 08	06 57	07 41	11 41	12 30	13 09	13 40	
	08	303 57.5 39.8	252 04.8 6.8	19 40.1	0.0	58.4		56	06 05	06 50	07 32	11 29	12 19	13 00	13 32	
	09	318 57.4 . 40.4	266 30.6 6.8	19 40.1	0.2	58.4		54	06 01	06 44	07 23	11 18	12 09	12 51	13 26	
	10	333 57.3 41.1	280 56.4 6.7	19 39.9	0.4	58.4		52	05 58	06 39	07 16	11 09	12 00	12 44	13 20	
	11	348 57.3 41.8	295 22.1 6.8	19 39.5	0.4	58.5		50	05 55	06 34	07 09	11 00	11 52	12 37	13 15	
	12	3 57.2 S17 42.5	309 47.9 6.8	S19 39.1	0.6	58.5		45	05 48	06 23	06 55	10 42	11 35	12 22	13 03	
	13	18 57.1 43.1	324 13.7 6.7	19 38.5	0.7	58.5		N 40	05 41	06 14	06 43	10 28	11 22	12 10	12 54	
	14	33 57.0 43.8	338 39.4 6.7	19 37.8	0.8	58.5		35	05 35	06 05	06 32	10 15	11 10	12 00	12 45	
	15	48 56.9 . 44.5	353 05.1 6.8	19 37.0	0.9	58.5		30	05 29	05 58	06 23	10 05	11 00	11 51	12 38	
	16	63 56.8 45.2	7 30.9 6.7	19 36.1	1.1	58.5		20	05 18	05 44	06 08	09 46	10 42	11 35	12 26	
	17	78 56.8 45.8	21 56.6 6.7	19 35.0	1.2	58.5		N 10	05 06	05 32	05 54	09 30	10 27	11 22	12 14	
	18	93 56.7 S17 46.5	36 22.3 6.7	S19 33.8	1.3	58.6		0	04 54	05 19	05 41	09 15	10 12	11 09	12 04	
	19	108 56.6 47.2	50 48.0 6.7	19 32.5	1.4	58.6		S 10	04 40	05 06	05 28	09 00	09 58	10 56	11 54	
	20	123 56.5 47.9	65 13.7 6.7	19 31.1	1.6	58.6		20	04 22	04 50	05 14	08 44	09 42	10 42	11 42	
	21	138 56.4 . 48.5	79 39.4 6.7	19 29.5	1.7	58.6		30	04 00	04 31	04 57	08 25	09 24	10 26	11 29	
	22	153 56.4 49.2	94 05.1 6.7	19 27.8	1.8	58.6		35	03 46	04 20	04 48	08 15	09 14	10 17	11 22	
	23	168 56.3 49.9	108 30.8 6.7	19 26.0	1.9	58.6		40	03 29	04 06	04 37	08 03	09 02	10 07	11 14	
							45	03 08	03 50	04 24	07 48	08 49	09 54	11 04		
MONDAY	13 00	183 56.2 S17 50.6	122 56.5 6.8	S19 24.1	2.1	58.6		S 50	02 39	03 29	04 08	07 31	08 31	09 39	10 52	
	01	198 56.1 51.2	137 22.3 6.7	19 22.0	2.1	58.6		52	02 24	03 19	04 00	07 22	08 23	09 32	10 46	
	02	213 56.0 51.9	151 48.0 6.7	19 19.9	2.4	58.7		54	02 06	03 08	03 52	07 13	08 15	09 24	10 40	
	03	228 55.9 . 52.6	166 13.7 6.7	19 17.5	2.4	58.7		56	01 43	02 54	03 43	07 03	08 05	09 16	10 33	
	04	243 55.8 53.2	180 39.4 6.7	19 15.1	2.5	58.7		58	01 12	02 39	03 32	06 51	07 53	09 06	10 26	
	05	258 55.8 53.9	195 05.1 6.8	19 12.6	2.7	58.7		S 60	00 08	02 20	03 20	06 37	07 40	08 55	10 17	
	06	273 55.7 S17 54.6	209 30.9 6.7	S19 09.9	2.8	58.7										
	07	288 55.6 55.2	223 56.6 6.7	19 07.1	2.9	58.7		Lat.	Sun-set	Twilight						
	08	303 55.5 55.9	238 22.3 6.8	19 04.2	3.1	58.7				Civil	Naut.	12	13	14	15	
	09	318 55.4 . 56.6	252 48.1 6.8	19 01.1	3.1	58.7		<i>°</i>	<i>h m</i>	<i>h m</i>	<i>h m</i>	<i>h m</i>	<i>h m</i>	<i>h m</i>	<i>h m</i>	<i>h m</i>
	10	333 55.3 57.2	267 13.9 6.7	18 58.0	3.3	58.8		N 72	12 57	15 04	16 36	■	■	19 10	21 28	
	11	348 55.2 57.9	281 39.6 6.8	18 54.7	3.4	58.8		N 70	13 52	15 25	16 45	16 09	17 58	19 56	21 53	
	12	3 55.1 S17 58.6	296 05.4 6.8	S18 51.3	3.5	58.8		68	14 25	15 41	16 53	17 23	18 46	20 26	22 11	
	13	18 55.1 59.2	310 31.2 6.9	18 47.8	3.7	58.8		66	14 49	15 55	17 00	18 00	19 17	20 48	22 26	
	14	33 55.0 17 59.9	324 57.1 6.8	18 44.1	3.7	58.8		64	15 08	16 06	17 06	18 26	19 40	21 06	22 38	
	15	48 54.9 18 00.6	339 22.9 6.8	18 40.4	3.9	58.8		62	15 23	16 16	17 11	18 47	19 58	21 20	22 48	
	16	63 54.8 01.2	353 48.7 6.9	18 36.5	4.0	58.8		60	15 36	16 24	17 15	19 04	20 13	21 32	22 57	
	17	78 54.7 01.9	8 14.6 6.9	18 32.5	4.1	58.8		N 58	15 47	16 31	17 19	19 17	20 25	21 42	23 04	
	18	93 54.6 S18 02.5	22 40.5 6.9	S18 28.4	4.3	58.8		56	15 56	16 38	17 23	19 30	20 37	21 51	23 11	
	19	108 54.5 03.2	37 06.4 6.9	18 24.1	4.3	58.9		54	16 05	16 44	17 27	19 40	20 46	22 00	23 17	
	20	123 54.4 03.9	51 32.3 7.0	18 19.8	4.5	58.9		52	16 12	16 49	17 30	19 50	20 55	22 07	23 22	
	21	138 54.3 . 04.5	65 58.3 6.9	18 15.3	4.6	58.9		50	16 19	16 54	17 33	19 58	21 03	22 13	23 27	
	22	153 54.2 05.2	80 24.2 7.0	18 10.7	4.7	58.9		45	16 34	17 05	17 41	20 16	21 19	22 27	23 38	
	23	168 54.2 05.8	94 50.2 7.0	18 06.0	4.8	58.9		N 40	16 46	17 15	17 47	20 30	21 32	22 38	23 46	
TUESDAY	14 00	183 54.1 S18 06.5	109 16.2 7.0	S18 01.2	4.9	58.9		35	16 56	17 23	17 53	20 42	21 44	22 48	23 54	
	01	198 54.0 07.2	123 42.2 7.1	17 56.3	5.1	58.9		30	17 05	17 30	17 59	20 53	21 54	22 56	24 00	
	02	213 53.9 07.8	138 08.3 7.1	17 51.2	5.2	58.9		20	17 21	17 44	18 11	21 11	22 11	23 11	24 11	
	03	228 53.8 . 08.5	152 34.4 7.1	17 46.0	5.2	58.9		N 10	17 35	17 57	18 22	21 27	22 25	23 23	24 21	
	04	243 53.7 09.1	167 00.5 7.1	17 40.8	5.4	58.9		0	17 48	18 10	18 35	21 42	22 39	23 35	24 30	
	05	258 53.6 09.8	181 26.6 7.2	17 35.4	5.5	59.0		S 10	18 01	18 23	18 49	21 57	22 53	23 47	24 39	
	06	273 53.5 S18 10.4	195 52.8 7.1	S17 29.9	5.6	59.0		20	18 15	18 39	19 07	22 13	23 08	23 59	24 48	
	07	288 53.4 11.1	210 18.9 7.3	17 24.3	5.8	59.0		30	18 32	18 58	19 29	22 32	23 25	24 14	00 14	
	08	303 53.3 11.7	224 45.2 7.2	17 18.5	5.8	59.0		35	18 42	19 09	19 43	22 42	23 34	24 21	00 21	
	09	318 53.2 . 12.4	239 11.4 7.3	17 12.7	5.9	59.0		40	18 53	19 23	20 00	22 54	23 45	24 31	00 31	
	10	333 53.1 13.0	253 37.7 7.3	17 06.8	6.1	59.0		45	19 06	19 40	20 22	23 08	23 58	24 41	00 41	
	11	348 53.0 13.7	268 04.0 7.3	17 00.7	6.1	59.0		S 50	19 22	20 01	20 52	23 25	24 13	00 13	00 55	
	12	3 52.9 S18 14.4	282 30.3 7.3	S16 54.6	6.3	59.0		52	19 29	20 11	21 07	23 33	24 21	00 21	01 01	
	13	18 52.8 15.0	296 56.6 7.4	16 48.3	6.4	59.0		54	19 38	20 23	21 25	23 42	24 29	00 29	01 07	
	14	33 52.7 15.7	311 23.0 7.4	16 41.9	6.4	59.0		56	19 47	20 36	21 49	23 53	24 38	00 38	01 14	
	15	48 52.6 . 16.3	325 49.4 7.5	16 35.5	6.6	59.0		58	19 58	20 52	22 22	24 04	00 04	00 48	01 23	
	16	63 52.5 17.0	340 15.9 7.5	16 28.9	6.7	59.1		S 60	20 11	21 11	///	24 17	00 17	01 00	01 32	
	17	78 52.4 17.6	354 42.4 7.5	16 22.2	6.8	59.1										
	18	93 52.3 S18 18.3	9 08.9 7.5	S16 15.4	6											

G.M.T.	ARIES		VENUS -3.4		MARS +1.6		JUPITER -1.8		SATURN +0.8		STARS		
	G.H.A.		G.H.A.	Dec.	G.H.A.	Dec.	G.H.A.	Dec.	G.H.A.	Dec.	Name	S.H.A.	Dec.
15 00	53 50.4	200 55.0	S 11 46.4		175 16.8	S 20 38.3	109 57.2	S 20 28.2	116 44.5	S 21 23.7	Acamar	315 47.6	S 40 27.5
01	68 52.8	215 54.5	47.5		190 17.4	38.7	124 59.3	28.1	131 46.8	23.7	Achernar	335 55.3	S 57 26.0
02	83 55.3	230 53.9	48.6		205 18.0	39.1	140 01.3	28.0	146 49.0	23.7	Acrux	173 53.4	S 62 52.9
03	98 57.8	245 53.4	49.7		220 18.6	39.5	155 03.4	27.9	161 51.3	23.6	Adhara	255 43.0	S 28 55.0
04	114 00.2	260 52.9	50.8		235 19.2	39.9	170 05.5	27.9	176 53.6	23.6	Aldebaran	291 33.9	N 16 26.0
05	129 02.7	275 52.3	51.9		250 19.7	40.3	185 07.6	27.8	191 55.8	23.6			
06	144 05.1	290 51.8	S 11 53.0		265 20.3	S 20 40.7	200 09.6	S 20 27.7	206 58.1	S 21 23.5	Alioth	166 55.4	N 56 10.0
07	159 07.6	305 51.3	54.0		280 20.9	41.1	215 11.7	27.6	222 00.4	23.5	Alkaid	153 30.1	N 49 30.2
08	174 10.1	320 50.7	55.1		295 21.5	41.5	230 13.8	27.5	237 02.6	23.5	Al Na'ir	28 32.7	S 47 09.0
09	189 12.5	335 50.2	56.2		310 22.1	41.9	245 15.9	27.4	252 04.9	23.4	Alnilam	276 25.7	S 1 13.5
10	204 15.0	350 49.7	57.3		325 22.7	42.3	260 17.9	27.4	267 07.2	23.4	Alphard	218 34.4	S 8 29.4
11	219 17.5	5 49.1	58.4		340 23.3	42.7	275 20.0	27.3	282 09.4	23.4			
12	234 19.9	20 48.6	S 11 59.5		355 23.9	S 20 43.1	290 22.1	S 20 27.2	297 11.7	S 21 23.3	Alphecca	126 44.5	N 26 50.7
13	249 22.4	35 48.0	12 00.6		10 24.5	43.5	305 24.1	27.1	312 14.0	23.3	Alpheratz	358 23.7	N 28 52.9
14	264 24.9	50 47.5	01.7		25 25.1	43.8	320 26.2	27.0	327 16.2	23.3	Altair	62 46.5	N 8 46.2
15	279 27.3	65 47.0	02.7		40 25.7	44.2	335 28.3	26.9	342 18.5	23.2	Ankaa	353 53.9	S 42 31.0
16	294 29.8	80 46.4	03.8		55 26.3	44.6	350 30.4	26.8	357 20.8	23.2	Antares	113 14.6	S 26 20.7
17	309 32.3	95 45.9	04.9		70 26.8	45.0	5 32.4	26.8	12 23.0	23.2			
18	324 34.7	110 45.4	S 12 06.0		85 27.4	S 20 45.4	20 34.5	S 20 26.7	27 25.3	S 21 23.2	Arcturus	146 31.7	N 19 23.0
19	339 37.2	125 44.8	07.1		100 28.0	45.8	35 36.6	26.6	42 27.6	23.1	Atria	108 52.0	S 68 57.5
20	354 39.6	140 44.3	08.2		115 28.6	46.2	50 38.6	26.5	57 29.8	23.1	Avior	234 33.7	S 59 22.9
21	9 42.1	155 43.7	09.2		130 29.2	46.6	65 40.7	26.4	72 32.1	23.1	Bellatrix	279 13.6	N 6 18.9
22	24 44.6	170 43.2	10.3		145 29.8	47.0	80 42.8	26.3	87 34.3	23.0	Betelgeuse	271 43.3	N 7 24.0
23	39 47.0	185 42.7	11.4		160 30.4	47.4	95 44.9	26.3	102 36.6	23.0			
16 00	54 49.5	200 42.1	S 12 12.5		175 31.0	S 20 47.7	110 46.9	S 20 26.2	117 38.9	S 21 23.0	Canopus	264 13.1	S 52 40.3
01	69 52.0	215 41.6	13.6		190 31.5	48.1	125 49.0	26.1	132 41.1	22.9	Capella	281 31.8	N 45 57.5
02	84 54.4	230 41.0	14.6		205 32.1	48.5	140 51.1	26.0	147 43.4	22.9	Deneb	49 58.2	N 45 08.9
03	99 56.9	245 40.5	15.7		220 32.7	48.9	155 53.1	25.9	162 45.7	22.9	Denebola	183 13.7	N 14 47.2
04	114 59.4	260 39.9	16.8		235 33.3	49.3	170 55.2	25.8	177 47.9	22.8	Diphda	349 34.8	S 18 11.8
05	130 01.8	275 39.4	17.9		250 33.9	49.7	185 57.3	25.7	192 50.2	22.8			
06	145 04.3	290 38.9	S 12 19.0		265 34.5	S 20 50.1	200 59.3	S 20 25.7	207 52.5	S 21 22.8	Dubhe	194 39.8	N 61 57.2
07	160 06.8	305 38.3	20.0		280 35.1	50.5	216 01.4	25.6	222 54.7	22.7	Elnath	279 01.7	N 28 34.5
08	175 09.2	320 37.8	21.1		295 35.7	50.8	231 03.5	25.5	237 57.0	22.7	Eltanin	91 04.8	N 51 29.9
09	190 11.7	335 37.2	22.2		310 36.2	51.2	246 05.5	25.4	252 59.3	22.7	Enif	34 25.5	N 9 42.1
10	205 14.1	350 36.7	23.3		325 36.8	51.6	261 07.6	25.3	268 01.5	22.6	Fomalhaut	16 06.9	S 29 49.6
11	220 16.6	5 36.1	24.3		340 37.4	52.0	276 09.7	25.2	283 03.8	22.6			
12	235 19.1	20 35.6	S 12 25.4		355 38.0	S 20 52.4	291 11.7	S 20 25.1	298 06.1	S 21 22.6	Gacrux	172 44.8	S 56 53.6
13	250 21.5	35 35.0	26.5		10 38.6	52.8	306 13.8	25.1	313 08.3	22.5	Gienah	176 32.7	S 17 19.6
14	265 24.0	50 34.5	27.6		25 39.2	53.2	321 15.9	25.0	328 10.6	22.5	Hadar	149 43.9	S 60 11.1
15	280 26.5	65 33.9	28.6		40 39.8	53.5	336 17.9	24.9	343 12.8	22.5	Hamal	328 44.5	N 23 17.0
16	295 28.9	80 33.4	29.7		55 40.3	53.9	351 20.0	24.8	358 15.1	22.4	Kaus Aust.	84 35.9	S 34 24.2
17	310 31.4	95 32.8	30.8		70 40.9	54.3	6 22.1	24.7	13 17.4	22.4			
18	325 33.9	110 32.3	S 12 31.8		85 41.5	S 20 54.7	21 24.1	S 20 24.6	28 19.6	S 21 22.4	Kochab	137 19.6	N 74 18.8
19	340 36.3	125 31.7	32.9		100 42.1	55.1	36 26.2	24.5	43 21.9	22.3	Markab	14 17.1	N 15 00.1
20	355 38.8	140 31.2	34.0		115 42.7	55.5	51 28.3	24.5	58 24.2	22.3	Menkar	314 55.6	N 3 56.4
21	10 41.3	155 30.6	35.1		130 43.3	55.8	66 30.3	24.4	73 26.4	22.3	Menkent	148 54.0	S 36 10.7
22	25 43.7	170 30.1	36.1		145 43.8	56.2	81 32.4	24.3	88 28.7	22.3	Miaplacidus	221 47.8	S 69 33.3
23	40 46.2	185 29.5	37.2		160 44.4	56.6	96 34.5	24.2	103 30.9	22.2			
17 00	55 48.6	200 29.0	S 12 38.3		175 45.0	S 20 57.0	111 36.5	S 20 24.1	118 33.2	S 21 22.2	Mirfak	309 35.8	N 49 43.6
01	70 51.1	215 28.4	39.3		190 45.6	57.4	126 38.6	24.0	133 35.5	22.2	Nunki	76 47.0	S 26 20.7
02	85 53.6	230 27.9	40.4		205 46.2	57.7	141 40.6	23.9	148 37.7	22.1	Peacock	54 21.0	S 56 51.7
03	100 56.0	245 27.3	41.5		220 46.7	58.1	156 42.7	23.9	163 40.0	22.1	Pollux	244 15.3	N 28 07.0
04	115 58.5	260 26.8	42.5		235 47.3	58.5	171 44.8	23.8	178 42.3	22.1	Procyon	245 40.4	N 5 19.4
05	131 01.0	275 26.2	43.6		250 47.9	58.9	186 46.8	23.7	193 44.5	22.0			
06	146 03.4	290 25.7	S 12 44.7		265 48.5	S 20 59.3	201 48.9	S 20 23.6	208 46.8	S 21 22.0	Rasalhague	96 43.0	N 12 35.4
07	161 05.9	305 25.1	45.7		280 49.1	20 59.6	216 51.0	23.5	223 49.0	22.0	Regulus	208 25.1	N 12 09.3
08	176 08.4	320 24.6	46.8		295 49.6	21 00.0	231 53.0	23.4	238 51.3	21.9	Rigel	281 49.3	S 8 14.7
09	191 10.8	335 24.0	47.8		310 50.2	00.4	246 55.1	23.3	253 53.6	21.9	Rigel Kent.	140 45.8	S 60 40.4
10	206 13.3	350 23.4	48.9		325 50.8	00.8	261 57.1	23.2	268 55.8	21.9	Sabik	102 57.7	S 15 40.6
11	221 15.7	5 22.9	50.0		340 51.4	01.2	276 59.2	23.2	283 58.1	21.8			
12	236 18.2	20 22.3	S 12 51.0		355 52.0	S 21 01.5	292 01.3	S 20 23.1	299 00.3	S 21 21.8	Schedar	350 24.7	N 56 19.9
13	251 20.7	35 21.8	52.1		10 52.5	01.9	307 03.3	23.0	314 02.6	21.8	Shaula	97 15.4	S 37 04.6
14	266 23.1	50 21.2	53.2		25 53.1	02.3	322 05.4	22.9	329 04.9	21.7	Sirius	259 07.9	S 16 39.7
15	281 25.6	65 20.7	54.2		40 53.7	02.7	337 07.5	22.8	344 07.1	21.7	Spica	159 12.7	S 10 57.5
16	296 28.1	80 20.1	55.3		55 54.3	03.0	352 09.5	22.7	359 09.4	21.7	Suhail	223 21.1	S 43 16.4
17	311 30.5	95 19.5	56.3		70 54.9	03.4	7 11.6	22.6	14 11.6	21.6			
18	326 33.0	110 19.0	S 12 57.4		85 55.4	S 21 03.8	22 13.6	S 20 22.5	29 13.9	S 21 21.6	Vega	81 05.7	N 38 45.1
19	341 35.5	125 18.4	58.4		100 56.0	04.2	37 15.7	22.5	44 16.2	21.6	Zuben'ubi	137 49.0	S 15 52.8
20	356 37.9	140 17.9	12 59.5		115 56.6	04.5	52 17.8	22.4	59 18.4	21.5			
21	11 40.4	155 17.3	13 00.6		130 57.2	04.9	67 19.8	22.3	74 20.7	21.5			
22	26 42.9	170 16.7	01.6		145 57.7	05.3	82 21.9	22.2	89 22.9	21.5			
23	41 45.3	185 16.2	02.7		160 58.3	05.7	97 23.9	22.1	104 25.2	21.4			
Mer. Pass. 20 17.4		v -0.5	d 1.1		v 0.6	d 0.4	v 2.1	d 0.1	v 2.3	d 0.0			
											Venus	145 52.6	10 38
											Mars	120 41.5	12 17
											Jupiter	55 57.4	16 35
											Saturn	62 49.4	16 07

G.M.T.		SUN		MOON				Lat.	Twilight		Sun-rise	Moonrise									
		G.H.A.	Dec.	G.H.A.	<i>v</i>	Dec.	<i>d</i>		H.P.	Naut.		Civil	15	16	17	18					
d	h	°	'	°	'	°	'	'	°	h	m	h	m	h	m	h	m				
WEDNESDAY	15 00	183	51.7	S 18	22.1	95	48.7	7.7	S 15	32.5	7.5	59.1	N 72	07 02	08 38	11 21	15 23	15 09	14 59	14 49	
	01	198	51.6		22.8	110	15.4	7.8	15	25.0	7.5	59.1	N 70	06 52	08 15	09 55	14 57	14 55	14 51	14 48	
	02	213	51.5		23.4	124	42.2	7.8	15	17.5	7.7	59.1	68	06 43	07 57	09 17	14 37	14 42	14 45	14 48	
	03	228	51.4	••	24.1	139	09.0	7.9	15	09.8	7.8	59.1	66	06 36	07 42	08 50	14 22	14 32	14 40	14 47	
	04	243	51.3		24.7	153	35.9	7.9	15	02.0	7.9	59.1	64	06 29	07 30	08 30	14 09	14 24	14 36	14 47	
	05	258	51.2		25.3	168	02.8	7.9	14	54.1	7.9	59.2	62	06 24	07 20	08 14	13 58	14 17	14 32	14 46	
	06	273	51.1	S 18	26.0	182	29.7	8.0	S 14	46.2	8.1	59.2	60	06 19	07 11	08 00	13 48	14 10	14 29	14 46	
	07	288	51.0		26.6	196	56.7	8.0	14	38.1	8.1	59.2	N 58	06 14	07 03	07 48	13 40	14 05	14 26	14 45	
	08	303	50.9		27.3	211	23.7	8.0	14	30.0	8.3	59.2	56	06 10	06 55	07 38	13 32	14 00	14 23	14 45	
	09	318	50.8	••	27.9	225	50.7	8.1	14	21.7	8.3	59.2	54	06 06	06 49	07 29	13 26	13 55	14 21	14 45	
THURSDAY	10 00	333	50.7		28.5	240	17.8	8.1	14	13.4	8.4	59.2	52	06 02	06 44	07 21	13 20	13 51	14 19	14 45	
	01	348	50.6		29.2	254	44.9	8.1	14	05.0	8.5	59.2	50	05 59	06 38	07 14	13 15	13 47	14 17	14 44	
	02	3 50.5	S 18	29.8	269	12.0	8.2	S 13	56.5	8.6	59.2	45	05 51	06 27	06 59	13 03	13 39	14 12	14 44		
	03	18 50.4		30.5	283	39.2	8.2	13	47.9	8.7	59.2	N 40	05 44	06 17	06 46	12 54	13 33	14 09	14 44		
	04	33 50.3		31.1	298	06.4	8.3	13	39.2	8.8	59.2	35	05 38	06 08	06 35	12 45	13 27	14 06	14 43		
	05	48 50.2	••	31.7	312	33.7	8.3	13	30.4	8.8	59.2	30	05 31	06 00	06 25	12 38	13 22	14 03	14 43		
	06	63 50.1		32.4	327	01.0	8.3	13	21.6	8.9	59.2	20	05 19	05 46	06 09	12 26	13 13	13 58	14 42		
	07	78 49.9		33.0	341	28.3	8.4	13	12.7	9.0	59.2	N 10	05 07	05 33	05 55	12 14	13 05	13 54	14 42		
	08	93 49.8	S 18	33.6	355	55.7	8.4	S 13	03.7	9.1	59.2	0	04 54	05 19	05 41	12 04	12 58	13 50	14 42		
	09	108 49.7		34.3	10	23.1	8.4	12	54.6	9.2	59.2	S 10	04 39	05 05	05 28	11 54	12 50	13 46	14 41		
FRIDAY	10 00	123	49.6		34.9	24	50.5	8.5	12	45.4	9.2	59.2	20	04 21	04 49	05 13	11 42	12 42	13 42	14 41	
	01	138	49.5	••	35.5	39	18.0	8.5	12	36.2	9.4	59.2	30	03 58	04 30	04 56	11 29	12 33	13 37	14 40	
	02	153	49.4		36.2	53	45.5	8.6	12	26.8	9.4	59.2	35	03 44	04 18	04 46	11 22	12 28	13 34	14 40	
	03	168	49.3		36.8	68	13.1	8.5	12	17.4	9.4	59.3	40	03 26	04 03	04 34	11 14	12 22	13 31	14 40	
	04	183	49.2	S 18	37.4	82	40.6	8.7	S 12	08.0	9.6	59.3	45	03 03	03 46	04 20	11 04	12 15	13 27	14 40	
	05	198	49.1		38.1	97	08.3	8.6	11	58.4	9.6	59.3	S 50	02 33	03 25	04 04	10 52	12 07	13 23	14 39	
	06	213	49.0		38.7	111	35.9	8.7	11	48.8	9.7	59.3	52	02 16	03 14	03 56	10 46	12 03	13 21	14 39	
	07	228	48.9	••	39.3	126	03.6	8.7	11	39.1	9.8	59.3	54	01 57	03 02	03 47	10 40	11 59	13 19	14 39	
	08	243	48.7		39.9	140	31.3	8.8	11	29.3	9.8	59.3	56	01 32	02 48	03 37	10 33	11 54	13 16	14 39	
	09	258	48.6		40.6	154	59.1	8.8	11	19.5	9.9	59.3	58	00 55	02 31	03 26	10 26	11 49	13 14	14 38	
	10 00	273	48.5	S 18	41.2	169	26.9	8.8	S 11	09.6	10.0	59.3	S 60	///	02 10	03 13	10 17	11 43	13 11	14 38	
	01	288	48.4		41.8	183	54.7	8.9	10	59.6	10.0	59.3									
	02	303	48.3		42.5	198	22.6	8.9	10	49.6	10.1	59.3	Lat.	Sun-set	Twilight		Moonset				
	03	318	48.2	••	43.1	212	50.5	8.9	10	39.5	10.2	59.3			Civil	Naut.	15	16	17	18	
	04	333	48.1		43.7	227	18.4	9.0	10	29.3	10.2	59.3	°	h	m	h	m	h	m	h	m
	05	348	48.0		44.3	241	46.4	8.9	10	19.1	10.3	59.3	N 72	12 06	14 50	16 26	21 28	23 33	25 33	01 33	
	06	3 47.8	S 18	45.0	256	14.3	9.1	S 10	08.8	10.4	59.3	N 70	13 34	15 14	16 37	21 53	23 47	25 38	01 38		
	07	18 47.7		45.6	270	42.4	9.0	9	58.4	10.4	59.3	68	14 12	15 32	16 45	22 11	23 57	25 42	01 42		
	08	33 47.6		46.2	285	10.4	9.1	9	48.0	10.5	59.3	66	14 39	15 47	16 53	22 26	24 05	00 05	01 45		
	09	48 47.5	••	46.8	299	38.5	9.2	9	37.5	10.5	59.3	64	14 59	15 59	16 59	22 38	24 13	00 13	01 48		
	10 00	63	47.4		47.4	314	06.7	9.1	9	27.0	10.6	59.3	62	15 15	16 09	17 05	22 48	24 19	00 19	01 50	
	01	78	47.3		48.1	328	34.8	9.2	9	16.4	10.6	59.3	60	15 29	16 18	17 10	22 57	24 24	00 24	01 52	
	02	93	47.2	S 18	48.7	343	03.0	9.2	S 9	05.8	10.7	59.3	N 58	15 41	16 26	17 15	23 04	24 29	00 29	01 54	
	03	108	47.0		49.3	357	31.2	9.3	8	55.1	10.8	59.3	56	15 51	16 33	17 19	23 11	24 33	00 33	01 55	
	04	123	46.9		49.9	11	59.5	9.2	8	44.3	10.8	59.3	54	16 00	16 40	17 23	23 17	24 37	00 37	01 57	
	05	138	46.8	••	50.6	26	27.7	9.4	8	33.5	10.9	59.3	52	16 08	16 45	17 27	23 22	24 40	00 40	01 58	
	06	153	46.7		51.2	40	56.1	9.3	8	22.6	10.9	59.3	50	16 15	16 51	17 30	23 27	24 43	00 43	01 59	
	07	168	46.6		51.8	55	24.4	9.4	8	11.7	10.9	59.3	45	16 31	17 02	17 38	23 38	24 50	00 50	02 02	
	08	183	46.4	S 18	52.4	69	52.8	9.3	S 8	00.8	11.0	59.3	N 40	16 43	17 12	17 45	23 46	24 55	00 55	02 04	
	09	198	46.3		53.0	84	21.1	9.5	7	49.8	11.1	59.3	35	16 54	17 21	17 52	23 54	25 00	01 00	02 06	
	10 00	213	46.2		53.6	98	49.6	9.4	7	38.7	11.1	59.3	30	17 04	17 29	17 58	24 00	00 00	01 04	02 07	
	01	228	46.1	••	54.3	113	18.0	9.5	7	27.6	11.1	59.3	20	17 20	17 44	18 10	24 11	00 11	01 11	02 10	
	02	243	46.0		54.9	127	46.5	9.5	7	16.5	11.2	59.3	N 10	17 35	17 57	18 22	24 21	00 21	01 17	02 12	
	03	258	45.9		55.5	142	15.0	9.5	7	05.3	11.2	59.3	0	17 48	18 10	18 36	24 30	00 30	01 23	02 15	
	04	273	45.7	S 18	56.1	156	43.5	9.6	S 6	54.1	11.3	59.3	S 10	18 02	18 25	18 51	24 39	00 39	01 29	02 17	
	05	288	45.6		56.7	171	12.1	9.5	6	42.8	11.3	59.3	20	18 17	18 41	19 09	24 48	00 48	01 35	02 19	
	06	303	45.5		57.3	185	40.6	9.6	6	31.5	11.3	59.3	30	18 34	19 01	19 32	00 14	00 59	01 41	02 22	
	07	318	45.4	••	57.9	200	09.2	9.7	6	20.2	11.4	59.3	35	18 45	19 13	19 47	00 21	01 05	01 45	02 23	
	08	333	45.2		58.5	214	37.9	9.6	6	08.8	11.4	59.3	4								

		ARIES		VENUS -3.4		MARS +1.6		JUPITER -1.7		SATURN +0.8		STARS			
G.M.T.		G.H.A.		G.H.A. Dec.		G.H.A. Dec.		G.H.A. Dec.		G.H.A. Dec.		Name		S.H.A. Dec.	
18	00	56 47.8	200 15.6	S13 03.7	175 58.9	S21 06.0	112 26.0	S20 22.0	119 27.5	S21 21.4	Acamar	315 47.5	S 40 27.5		
	01	71 50.2	215 15.1	04.8	190 59.5	06.4	127 28.1	21.9	134 29.7	21.4	Achernar	335 55.3	S 57 26.0		
	02	86 52.7	230 14.5	05.8	206 00.0	06.8	142 30.1	21.8	149 32.0	21.3	Acrux	173 53.4	S 62 52.9		
	03	101 55.2	245 13.9	.. 06.9	221 00.6	.. 07.2	157 32.2	.. 21.8	164 34.2	.. 21.3	Adhara	255 43.0	S 28 55.1		
	04	116 57.6	260 13.4	07.9	236 01.2	07.5	172 34.2	21.7	179 36.5	21.3	Aldebaran	291 33.9	N 16 26.0		
05	132 00.1	275 12.8	09.0	251 01.8	07.9	187 36.3	21.6	194 38.7	21.2						
SATURDAY	06	147 02.6	290 12.2	S13 10.0	266 02.3	S21 08.3	202 38.3	S20 21.5	209 41.0	S21 21.2	Alioth	166 55.4	N 56 09.9		
	07	162 05.0	305 11.7	11.1	281 02.9	08.6	217 40.4	21.4	224 43.3	21.2	Alkaid	153 30.1	N 49 30.2		
	08	177 07.5	320 11.1	12.1	296 03.5	09.0	232 42.5	21.3	239 45.5	21.1	Al Na'ir	28 32.7	S 47 09.9		
	09	192 10.0	335 10.5	.. 13.2	311 04.1	.. 09.4	247 44.5	.. 21.2	254 47.8	.. 21.1	Alnilam	276 25.7	S 1 13.5		
	10	207 12.4	350 10.0	14.2	326 04.6	09.8	262 46.6	21.1	269 50.0	21.1	Alphard	218 34.4	S 8 29.4		
	11	222 14.9	5 09.4	15.3	341 05.2	10.1	277 48.6	21.0	284 52.3	21.0					
	12	237 17.3	20 08.8	S13 16.3	356 05.8	S21 10.5	292 50.7	S20 21.0	299 54.5	S21 21.0	Alphecca	126 44.5	N 26 50.7		
	13	252 19.8	35 08.3	17.4	11 06.3	10.9	307 52.7	20.9	314 56.8	21.0	Alpheratz	353 23.7	N 28 52.9		
	14	267 22.3	50 07.7	18.4	26 06.9	11.2	322 54.8	20.8	329 59.1	20.9	Altair	62 46.5	N 8 46.2		
	15	282 24.7	65 07.1	.. 19.5	41 07.5	.. 11.6	337 56.9	.. 20.7	345 01.3	.. 20.9	Ankaa	353 54.0	S 42 31.0		
SUNDAY	16	297 27.2	80 06.5	20.5	56 08.1	12.0	352 58.9	20.6	0 03.6	20.9	Antares	113 14.6	S 26 20.7		
	17	312 29.7	95 06.0	21.6	71 08.6	12.3	8 01.0	20.5	15 05.8	20.8					
	18	327 32.1	110 05.4	S13 22.6	86 09.2	S21 12.7	23 03.0	S20 20.4	30 08.1	S21 20.8	Arcturus	146 31.7	N 19 23.0		
	19	342 34.6	125 04.8	23.7	101 09.8	13.1	38 05.1	20.3	45 10.3	20.8	Atria	108 52.0	S 68 57.5		
	20	357 37.1	140 04.3	24.7	116 10.3	13.4	53 07.1	20.2	60 12.6	20.7	Avior	234 33.7	S 59 22.9		
	21	12 39.5	155 03.7	.. 25.8	131 10.9	.. 13.8	68 09.2	.. 20.2	75 14.9	.. 20.7	Bellatrix	279 13.6	N 6 18.9		
	22	27 42.0	170 03.1	26.8	146 11.5	14.2	83 11.2	20.1	90 17.1	20.7	Betelgeuse	271 43.3	N 7 24.0		
	23	42 44.5	185 02.5	27.8	161 12.1	14.5	98 13.3	20.0	105 19.4	20.6					
	00	57 46.9	200 02.0	S13 28.9	176 12.6	S21 14.9	113 15.3	S20 19.9	120 21.6	S21 20.6	Canopus	264 13.1	S 52 40.3		
	01	72 49.4	215 01.4	29.9	191 13.2	15.3	128 17.4	19.8	135 23.9	20.6	Capella	281 31.7	N 45 57.5		
02	87 51.8	230 00.8	31.0	206 13.8	15.6	143 19.4	19.7	150 26.1	20.5	Deneb	49 58.2	N 45 08.9			
03	102 54.3	245 00.3	.. 32.0	221 14.3	.. 16.0	158 21.5	.. 19.6	165 28.4	.. 20.5	Denebola	183 13.6	N 14 47.2			
04	117 56.8	259 59.7	33.1	236 14.9	16.4	173 23.5	19.5	180 30.6	20.4	Diphda	349 34.8	S 18 11.8			
05	132 59.2	274 59.1	34.1	251 15.5	16.7	188 25.6	19.4	195 32.9	20.4						
MONDAY	06	148 01.7	289 58.5	S13 35.1	266 16.0	S21 17.1	203 27.7	S20 19.3	210 35.2	S21 20.4	Dubhe	194 39.8	N 61 57.2		
	07	163 04.2	304 57.9	36.2	281 16.6	17.4	218 29.7	19.3	225 37.4	20.3	Elmath	279 01.7	N 28 34.5		
	08	178 06.6	319 57.4	37.2	296 17.2	17.8	233 31.8	19.2	240 39.7	20.3	Eltanin	91 04.8	N 51 29.9		
	09	193 09.1	334 56.8	.. 38.2	311 17.7	.. 18.2	248 33.8	.. 19.1	255 41.9	.. 20.3	Enif	34 25.5	N 9 42.1		
	10	208 11.6	349 56.2	39.3	326 18.3	18.5	263 35.9	19.0	270 44.2	20.2	Fomalhaut	16 06.9	S 29 49.6		
	11	223 14.0	4 55.6	40.3	341 18.9	18.9	278 37.9	18.9	285 46.4	20.2					
	12	238 16.5	19 55.1	S13 41.3	356 19.4	S21 19.3	293 40.0	S20 18.8	300 48.7	S21 20.2	Gacrux	172 44.8	S 56 53.6		
	13	253 19.0	34 54.5	42.4	11 20.0	19.6	308 42.0	18.7	315 50.9	20.1	Gienah	176 32.7	S 17 19.6		
	14	268 21.4	49 53.9	43.4	26 20.6	20.0	323 44.1	18.6	330 53.2	20.1	Hadar	149 43.9	S 60 11.1		
	15	283 23.9	64 53.3	.. 44.4	41 21.1	.. 20.3	338 46.1	.. 18.5	345 55.4	.. 20.1	Hamal	328 44.5	N 23 17.0		
16	298 26.3	79 52.7	45.5	56 21.7	20.7	353 48.2	18.4	0 57.7	20.0	Kaus Aust.	84 35.9	S 34 24.2			
17	313 28.8	94 52.2	46.5	71 22.3	21.1	8 50.2	18.4	15 59.9	20.0						
TUESDAY	18	328 31.3	109 51.6	S13 47.5	86 22.8	S21 21.4	23 52.3	S20 18.3	31 02.2	S21 20.0	Kochab	137 19.6	N 74 18.7		
	19	343 33.7	124 51.0	48.6	101 23.4	21.8	38 54.3	18.2	46 04.5	19.9	Markab	14 17.1	N 15 00.1		
	20	358 36.2	139 50.4	49.6	116 24.0	22.1	53 56.4	18.1	61 06.7	19.9	Menkar	314 55.6	N 3 56.4		
	21	13 38.7	154 49.8	.. 50.6	131 24.5	.. 22.5	68 58.4	.. 18.0	76 09.0	.. 19.9	Menkent	148 54.0	S 36 10.7		
	22	28 41.1	169 49.2	51.7	146 25.1	22.8	84 00.5	17.9	91 11.2	19.8	Miaplacidus	221 47.7	S 69 33.3		
	23	43 43.6	184 48.7	52.7	161 25.7	23.2	99 02.5	17.8	106 13.5	19.8					
	00	58 46.1	199 48.1	S13 53.7	176 26.2	S21 23.6	114 04.6	S20 17.7	121 15.7	S21 19.8	Mirfak	309 35.8	N 49 43.6		
	01	73 48.5	214 47.5	54.8	191 26.8	23.9	129 06.6	17.6	136 18.0	19.7	Nunki	76 47.0	S 26 20.7		
	02	88 51.0	229 46.9	55.8	206 27.3	24.3	144 08.6	17.5	151 20.2	19.7	Peacock	54 21.0	S 56 51.7		
	03	103 53.4	244 46.3	.. 56.8	221 27.9	.. 24.6	159 10.7	.. 17.4	166 22.5	.. 19.7	Pollux	244 15.3	N 28 07.0		
04	118 55.9	259 45.7	57.8	236 28.5	25.0	174 12.7	17.4	181 24.7	19.6	Procyon	245 40.4	N 5 19.4			
05	133 58.4	274 45.1	58.9	251 29.0	25.3	189 14.8	17.3	196 27.0	19.6						
WEDNESDAY	06	149 00.8	289 44.6	S13 59.9	266 29.6	S21 25.7	204 16.8	S20 17.2	211 29.2	S21 19.5	Rasalhague	96 43.0	N 12 35.4		
	07	164 03.3	304 44.0	14 00.9	281 30.2	26.1	219 18.9	17.1	226 31.5	19.5	Regulus	208 25.1	N 12 09.3		
	08	179 05.8	319 43.4	01.9	296 30.7	26.4	234 20.9	17.0	241 33.7	19.5	Rigel	281 49.3	S 8 14.7		
	09	194 08.2	334 42.8	.. 02.9	311 31.3	.. 26.8	249 23.0	.. 16.9	256 36.0	.. 19.4	Rigel Kent.	140 45.7	S 60 40.4		
	10	209 10.7	349 42.2	04.0	326 31.8	27.1	264 25.0	16.8	271 38.2	19.4	Sabik	102 57.7	S 15 40.6		
	11	224 13.2	4 41.6	05.0	341 32.4	27.5	279 27.1	16.7	286 40.5	19.4					
	12	239 15.6	19 41.0	S14 06.0	356 33.0	S21 27.8	294 29.1	S20 16.6	301 42.7	S21 19.3	Schedar	350 24.7	N 56 19.9		
	13	254 18.1	34 40.4	07.0	11 33.5	28.2	309 31.2	16.5	316 45.0	19.3	Shaula	97 15.4	S 37 04.6		
	14	269 20.6	49 39.8	08.0	26 34.1	28.5	324 33.2	16.4	331 47.2	19.3	Sirius	259 07.9	S 16 39.7		
	15	284 23.0	64 39.3	.. 09.1	41 34.6	.. 28.9	339 35.3	.. 16.3	346 49.5	.. 19.2	Spica	159 12.7	S 10 57.5		
16	299 25.5	79 38.7	10.1	56 35.2	29.2	354 37.3	16.3	1 51.7	19.2	Suhail	223 21.1	S 43 16.4			
17	314 27.9	94 38.1	11.1	71 35.8	29.6	9 39.3	16.2	16 54.0	19.2						
THURSDAY	18	329 30.4	109 37.5	S14 12.1	86 36.3	S21 29.9	24 41.4	S20 16.1	31 56.2	S21 19.1	Vega	81 05.7	N 38 45.1		
	19	344 32.9	124 36.9	13.1	101 36.9	30.3	39 43.4	16.0	46 58.5	19.1	Zuben'ubi	137 49.0	N 15 52.8		
	20	359 35.3	139 36.3	14.2	116 37.4	30.6	54 45.5	15.9	62 00.7	19.1					
	21	14 37.8	154 35.7	.. 15.2	131 38.0	.. 31.0	69 47.5	.. 15.8	77 03.0	.. 19.0		S.H.A.	Mer. Pass.		
	22	29 40.3	169 35.1	16.2	146 38.6	31.3	84 49.6	15.7	92 05.2	19.0	Venus	142 15.1	10 40		
	23	44 42.7	184 34.5	17.2	161 39.1	31.7	99 51.6	15.6	107 07.5	19.0	Mars	118 25.7	12 15		
	Mer. Pass. 20 05.6		v -0.6	d 1.0	v 0.6	d 0.4	v 2.1	d 0.1	v 2.3	d 0.0	Jupiter	55 28.4	16 25		
											Saturn	62 34.7	15 56		

G.M.T.	SUN			MOON			Lat.	Twilight		Sun-rise	Moonrise									
	G.H.A.		Dec.	G.H.A.	φ	Dec.		d	H.P.		Naut.	Civil	18	19	20	21				
	d	h	o	'	o	'		o	'	o	'	h	m	h	m	h	m	h	m	
SATURDAY	18 00	183	43.5	S 19 07.0	57	20.8	9.9	S	3	26.2	11.8	59.3	N 72	07 13	08 52	■	14 49	14 40	14 30	14 18
	01	198	43.4	07.6	71	49.7	9.9		3	14.4	11.8	59.3	N 70	07 01	08 26	10 17	14 48	14 45	14 42	14 40
	02	213	43.2	08.3	86	18.6	10.0		3	02.6	11.8	59.3	68	06 51	08 07	09 31	14 48	14 50	14 53	14 57
	03	228	43.1	08.9	100	47.6	9.9		2	50.8	11.9	59.3	66	06 43	07 51	09 02	14 47	14 54	15 01	15 11
	04	243	43.0	09.5	115	16.5	10.0		2	38.9	11.8	59.3	64	06 36	07 38	08 39	14 47	14 57	15 09	15 22
	05	258	42.9	10.1	129	45.5	10.0		2	27.1	11.9	59.3	62	06 30	07 27	08 22	14 46	15 00	15 15	15 32
	06	273	42.7	S 19 10.7	144	14.5	10.0	S	2	15.2	11.9	59.3	60	06 24	07 17	08 07	14 46	15 02	15 20	15 41
	07	288	42.6	11.2	158	43.5	10.0		2	03.3	11.9	59.3	N 58	06 20	07 09	07 55	14 45	15 05	15 25	15 48
	08	303	42.5	11.8	173	12.5	10.0		1	51.4	11.9	59.3	56	06 15	07 01	07 44	14 45	15 07	15 29	15 55
	09	318	42.3	12.4	187	41.5	10.0		1	39.5	11.9	59.3	54	06 11	06 54	07 35	14 45	15 08	15 33	16 01
	10	333	42.2	13.0	202	10.5	10.0		1	27.6	11.9	59.3	52	06 07	06 48	07 26	14 45	15 10	15 37	16 06
	11	348	42.1	13.6	216	39.5	10.1		1	15.7	12.0	59.2	50	06 03	06 43	07 19	14 44	15 12	15 40	16 11
	12	3 41.9	S 19 14.2	231	08.6	10.0	S	1	03.7	11.9	59.2	N 40	05 47	06 20	06 49	14 44	15 18	15 53	16 30	
	13	18	41.8	14.8	245	37.6	10.1		0	51.8	12.0	59.2	35	05 40	06 11	06 38	14 43	15 20	15 58	16 38
	14	33	41.7	15.4	260	06.7	10.1		0	39.8	11.9	59.2	30	05 34	06 03	06 28	14 43	15 22	16 03	16 45
	15	48	41.6	16.0	274	35.8	10.0		0	27.9	11.9	59.2	20	05 21	05 48	06 11	14 42	15 26	16 11	16 56
	16	63	41.4	16.6	289	04.8	10.1		0	16.0	12.0	59.2	N 10	05 08	05 34	05 56	14 42	15 30	16 18	17 07
	17	78	41.3	17.2	303	33.9	10.1	S	0	04.0	11.9	59.2	0	04 54	05 20	05 42	14 42	15 33	16 24	17 16
	18	93	41.2	S 19 17.8	318	03.0	10.1	N	0	07.9	12.0	59.2	S 10	04 39	05 05	05 28	14 41	15 36	16 31	17 26
	19	108	41.0	18.4	332	32.1	10.1		0	19.9	11.9	59.2	20	04 20	04 48	05 12	14 41	15 39	16 38	17 37
	20	123	40.9	19.0	347	01.2	10.1		0	31.8	11.9	59.2	30	03 56	04 28	04 54	14 40	15 43	16 46	17 49
	21	138	40.7	19.6	1 30.3	10.1			0	43.7	11.9	59.2	35	03 41	04 16	04 44	14 40	15 46	16 51	17 55
	22	153	40.6	20.2	15	59.4	10.1		0	55.6	12.0	59.2	40	03 23	04 01	04 32	14 40	15 48	16 56	18 03
	23	168	40.5	20.7	30	28.5	10.1		1	07.6	11.9	59.2	45	02 59	03 43	04 17	14 40	15 51	17 03	18 13
SUNDAY	19 00	183	40.3	S 19 21.3	44	57.6	10.1	N	1	19.5	11.9	59.2	S 50	02 27	03 20	04 00	14 39	15 55	17 10	18 24
	01	198	40.2	21.9	59	26.7	10.1		1	31.4	11.9	59.1	52	02 10	03 09	03 52	14 39	15 57	17 14	18 29
	02	213	40.1	22.5	73	55.8	10.1		1	43.3	11.8	59.1	54	01 49	02 56	03 43	14 39	15 59	17 18	18 35
	03	228	39.9	23.1	88	24.9	10.1		1	55.1	11.9	59.1	56	01 20	02 41	03 32	14 39	16 01	17 22	18 41
	04	243	39.8	23.7	102	54.0	10.1		2	07.0	11.8	59.1	58	00 33	02 23	03 20	14 38	16 03	17 27	18 49
	05	258	39.7	24.3	117	23.1	10.1		2	18.8	11.9	59.1	S 60	///	02 01	03 06	14 38	16 06	17 32	18 57
	06	273	39.5	S 19 24.8	131	52.2	10.1	N	2	30.7	11.8	59.1								
	07	288	39.4	25.4	146	21.3	10.1		2	42.5	11.8	59.1	Lat.	Sun-set	Twilight	Moonset				
	08	303	39.2	26.0	160	50.4	10.1		2	54.3	11.8	59.1			Civil	Naut.	18	19	20	21
	09	318	39.1	26.6	175	19.5	10.1		3	06.1	11.7	59.1				h m	h m	h m	h m	h m
	10	333	39.0	27.2	189	48.6	10.1		3	17.8	11.8	59.1	N 72	■	14 38	16 17	01 33	03 30	05 28	07 28
	11	348	38.8	27.8	204	17.7	10.1		3	29.6	11.7	59.1	N 70	13 14	15 04	16 29	01 38	03 27	05 17	07 08
	12	3 38.7	S 19 28.3	218	46.8	10.1	N	3	41.3	11.7	59.0	68	13 59	15 23	16 38	01 42	03 25	05 09	06 52	
	13	18	38.6	28.9	233	15.9	10.1		3	53.0	11.6	59.0	66	14 28	15 39	16 47	01 45	03 23	05 02	06 39
	14	33	38.4	29.5	247	45.0	10.1		4	04.6	11.7	59.0	64	14 51	15 52	16 54	01 48	03 22	04 56	06 29
	15	48	38.3	30.1	262	14.1	10.0		4	16.3	11.6	59.0	62	15 08	16 03	17 00	01 50	03 21	04 51	06 20
	16	63	38.1	30.7	276	43.1	10.1		4	27.9	11.6	59.0	60	15 23	16 13	17 06	01 52	03 19	04 47	06 12
	17	78	38.0	31.2	291	12.2	10.0		4	39.5	11.5	59.0	N 58	15 35	16 22	17 11	01 54	03 18	04 43	06 06
	18	93	37.8	S 19 31.8	305	41.2	10.1	N	4	51.0	11.6	59.0	56	15 46	16 29	17 15	01 55	03 17	04 39	06 00
	19	108	37.7	32.4	320	10.3	10.0		5	02.6	11.4	59.0	54	15 56	16 36	17 20	01 57	03 17	04 36	05 55
	20	123	37.6	33.0	334	39.3	10.1		5	14.0	11.5	58.9	52	16 04	16 42	17 24	01 58	03 16	04 33	05 50
	21	138	37.4	33.5	349	08.4	10.0		5	25.5	11.4	58.9	50	16 12	16 48	17 27	01 59	03 15	04 31	05 45
	22	153	37.3	34.1	3 37.4	10.0			5	36.9	11.4	58.9	45	16 28	17 00	17 36	02 02	03 14	04 25	05 36
	23	168	37.1	34.7	18	06.4	10.0		5	48.3	11.4	58.9								
MONDAY	20 00	183	37.0	S 19 35.3	32	35.4	10.0	N	5	59.7	11.3	58.9	N 40	16 41	17 10	17 43	02 04	03 12	04 21	05 28
	01	198	36.8	35.8	47	04.4	10.0		6	11.0	11.2	58.9	35	16 53	17 20	17 50	02 06	03 11	04 17	05 22
	02	213	36.7	36.4	61	33.4	10.0		6	22.2	11.3	58.9	30	17 02	17 28	17 57	02 07	03 11	04 14	05 16
	03	228	36.6	37.0	76	02.4	9.9		6	33.5	11.2	58.9	20	17 20	17 43	18 10	02 10	03 09	04 07	05 06
	04	243	36.4	37.6	90	31.3	10.0		6	44.7	11.1	58.8	N 10	17 35	17 57	18 23	02 12	03 07	04 02	04 57
	05	258	36.3	38.1	105	00.3	9.9		6	55.8	11.1	58.8	0	17 49	18 11	18 36	02 15	03 06	03 57	04 49
	06	273	36.1	S 19 38.7	119	29.2	9.9	N	7	06.9	11.1	58.8	S 10	18 03	18 26	18 52	02 17	03 05	03 52	04 41
	07	288	36.0	39.3	133	58.1	10.0		7	18.0	11.0	58.8	20	18 19	18 43	19 11	02 19	03 03	03 47	04 32
	08	303	35.8	39.8	148	27.1	9.9		7	29.0	11.0	58.8	30	18 37	19 03	19 35	02 22	03 01	03 41	04 22
	09	318	35.7	40.4	162	56.0	9.8		7	40.0	10.9	58.8	35	18 48	19 16	19 50	02 23	03 00	03 38	04 16
	10	333	35.5	41.0	177	24.8	9.9		7	50.9	10.9	58.7	40	19 00	19 31	20 09	02 25	02 59	03 34	04 10
	11	348	35.4	41.5	191	53.7	9.9		8	01.8	10.8	58.7	45	19 14	19 49	20 33	02 27	02 58	03 29	04 02
	12	3 35.2	S 19 42.1	206	22.6	9.8	N	8	12.6	10.7	58.7	S 50	19 32	20 12	21 06	02 29	02 56	03 24	03 53	
	13	18	35.1	42.7	220	51.4	9.9		8	23.3	10.8	58.7	52	19						

G.M.T.		ARIES		VENUS -3.4		MARS +1.6		JUPITER -1.7		SATURN +0.8		STARS		
		G.H.A.		G.H.A.	Dec.	G.H.A.	Dec.	G.H.A.	Dec.	G.H.A.	Dec.	Name	S.H.A.	Dec.
TUESDAY	d	h												
	00	59 45.2	199 33.9	S 14 18.2	176 39.7	S 21 32.0	114 53.6	S 20 15.5	122 09.7	S 21 18.9	Acamar	315 47.5	S 40 27.5	
	01	74 47.7	214 33.3	192	191 40.2	32.4	129 55.7	15.4	137 12.0	18.9	Acernar	335 55.4	S 57 26.1	
	02	89 50.1	229 32.7	202	206 40.8	32.7	144 57.7	15.3	152 14.2	18.8	Acrux	173 53.4	S 62 52.9	
	03	104 52.6	244 32.1	212	221 41.4	33.1	159 59.8	15.2	167 16.5	18.8	Adhara	255 42.9	S 28 55.1	
	04	119 55.0	259 31.5	223	236 41.9	33.4	175 01.8	15.1	182 18.7	18.8	Aldebaran	291 33.9	N 16 26.0	
	05	134 57.5	274 30.9	233	251 42.5	33.8	190 03.9	15.0	197 21.0	18.7				
	06	150 00.0	289 30.3	S 14 24.3	266 43.0	S 21 34.1	205 05.9	S 20 15.0	212 23.2	S 21 18.7	Alioth	166 55.4	N 56 09.9	
	07	165 02.4	304 29.7	253	281 43.6	34.5	220 07.9	14.9	227 25.5	18.7	Alkaid	153 30.1	N 49 30.2	
	08	180 04.9	319 29.1	263	296 44.1	34.8	235 10.0	14.8	242 27.7	18.6	Al Na'ir	28 32.7	S 47 09.9	
	09	195 07.4	334 28.5	273	311 44.7	35.2	250 12.0	14.7	257 30.0	18.6	Alnilam	276 25.7	S 1 13.5	
	10	210 09.8	349 27.9	283	326 45.2	35.5	265 14.1	14.6	272 32.2	18.6	Alphard	218 34.4	S 8 29.4	
	11	225 12.3	4 27.3	293	341 45.8	35.9	280 16.1	14.5	287 34.5	18.5				
	12	240 14.8	19 26.7	S 14 30.3	356 46.4	S 21 36.2	295 18.2	S 20 14.4	302 36.7	S 21 18.5	Alphecca	126 44.5	N 26 50.7	
	13	255 17.2	34 26.1	31.3	11 46.9	36.5	310 20.2	14.3	317 39.0	18.5	Alpheratz	358 23.7	N 28 52.9	
	14	270 19.7	49 25.5	32.3	26 47.5	36.9	325 22.2	14.2	332 41.2	18.4	Altair	62 46.5	N 8 46.2	
	15	285 22.2	64 24.9	33.3	41 48.0	37.2	340 24.3	14.1	347 43.5	18.4	Ankaa	353 54.0	S 42 31.0	
	16	300 24.6	79 24.3	34.3	56 48.6	37.6	355 26.3	14.0	2 45.7	18.3	Antares	113 14.6	S 26 20.7	
	17	315 27.1	94 23.7	35.3	71 49.1	37.9	10 28.4	13.9	17 48.0	18.3				
	18	330 29.5	109 23.1	S 14 36.3	86 49.7	S 21 38.3	25 30.4	S 20 13.8	32 50.2	S 21 18.3	Arcturus	146 31.7	N 19 23.0	
	19	345 32.0	124 22.5	37.3	101 50.2	38.6	40 32.4	13.7	47 52.5	18.2	Atria	108 52.0	S 68 57.5	
	20	0 34.5	139 21.9	38.3	116 50.8	39.0	55 34.5	13.6	62 54.7	18.2	Avior	234 33.7	S 59 22.9	
	21	15 36.9	154 21.3	39.3	131 51.3	39.3	70 36.5	13.6	77 56.9	18.2	Bellatrix	279 13.6	N 6 18.9	
	22	30 39.4	169 20.7	40.3	146 51.9	39.6	85 38.6	13.5	92 59.2	18.1	Betelgeuse	271 43.3	N 7 24.0	
23	45 41.9	184 20.1	41.3	161 52.4	40.0	100 40.6	13.4	108 01.4	18.1					
WEDNESDAY	22	00	60 44.3	199 19.5	S 14 42.3	176 53.0	S 21 40.3	115 42.6	S 20 13.3	123 03.7	S 21 18.1	Canopus	264 13.0	S 52 40.4
	01	75 46.8	214 18.8	43.3	191 53.5	40.7	130 44.7	13.2	138 05.9	18.0	Capella	281 31.7	N 45 57.5	
	02	90 49.3	229 18.2	44.3	206 54.1	41.0	145 46.7	13.1	153 08.2	18.0	Deneb	49 58.2	N 45 08.9	
	03	105 51.7	244 17.6	45.3	221 54.6	41.3	160 48.7	13.0	168 10.4	18.0	Denebola	183 13.6	N 14 47.2	
	04	120 54.2	259 17.0	46.3	236 55.2	41.7	175 50.8	12.9	183 12.7	17.9	Diphda	349 34.8	S 18 11.8	
	05	135 56.7	274 16.4	47.3	251 55.7	42.0	190 52.8	12.8	198 14.9	17.9				
	06	150 59.1	289 15.8	S 14 48.3	266 56.3	S 21 42.4	205 54.9	S 20 12.7	213 17.2	S 21 17.8	Dubhe	194 39.8	N 61 57.2	
	07	166 01.6	304 15.2	49.3	281 56.8	42.7	220 56.9	12.6	228 19.4	17.8	Elmath	279 01.6	N 28 34.5	
	08	181 04.0	319 14.6	50.3	296 57.4	43.0	235 58.9	12.5	243 21.7	17.8	Eltanin	91 04.8	N 51 29.9	
	09	196 06.5	334 14.0	51.3	311 57.9	43.4	251 01.0	12.4	258 23.9	17.7	Enif	34 25.5	N 9 42.1	
	10	211 09.0	349 13.3	52.3	326 58.5	43.7	266 03.0	12.3	273 26.1	17.7	Fomalhaut	16 07.0	S 29 49.6	
	11	226 11.4	4 12.7	53.3	341 59.0	44.0	281 05.0	12.2	288 28.4	17.7				
	12	241 13.9	19 12.1	S 14 54.3	356 59.6	S 21 44.4	296 07.1	S 20 12.1	303 30.6	S 21 17.6	Gacrux	172 44.8	S 56 53.6	
	13	256 16.4	34 11.5	55.3	12 00.1	44.7	311 09.1	12.0	318 32.9	17.6	Gienah	176 32.7	S 17 19.6	
	14	271 18.8	49 10.9	56.2	27 00.7	45.1	326 11.1	11.9	333 35.1	17.6	Hadar	149 43.9	S 60 11.1	
	15	286 21.3	64 10.3	57.2	42 01.2	45.4	341 13.2	11.9	348 37.4	17.5	Hamal	328 44.5	N 23 17.0	
	16	301 23.8	79 09.7	58.2	57 01.8	45.7	356 15.2	11.8	3 39.6	17.5	Kaus Aust.	84 35.9	S 34 24.2	
	17	316 26.2	94 09.0	59.2	72 02.3	46.1	11 17.3	11.7	18 41.9	17.4				
	18	331 28.7	109 08.4	S 15 00.2	87 02.9	S 21 46.4	26 19.3	S 20 11.6	33 44.1	S 21 17.4	Kochab	137 19.6	N 74 18.7	
	19	346 31.2	124 07.8	01.2	102 03.4	46.7	41 21.3	11.5	48 46.3	17.4	Markab	14 17.2	N 15 00.1	
	20	1 33.6	139 07.2	02.2	117 04.0	47.1	56 23.4	11.4	63 48.6	17.3	Menkar	314 55.6	N 3 56.4	
	21	16 36.1	154 06.6	03.2	132 04.5	47.4	71 25.4	11.3	78 50.8	17.3	Menkent	148 54.0	S 36 10.7	
	22	31 38.5	169 06.0	04.1	147 05.1	47.7	86 27.4	11.2	93 53.1	17.3	Miaplacidus	221 47.7	S 69 33.3	
	23	46 41.0	184 05.3	05.1	162 05.6	48.1	101 29.5	11.1	108 55.3	17.2				
THURSDAY	23	00	61 43.5	199 04.7	S 15 06.1	177 06.2	S 21 48.4	116 31.5	S 20 11.0	123 57.6	S 21 17.2	Mirfak	309 35.8	N 49 43.6
	01	76 45.9	214 04.1	07.1	192 06.7	48.7	131 33.5	10.9	138 59.8	17.2	Nunki	76 47.0	S 26 20.7	
	02	91 48.4	229 03.5	08.1	207 07.2	49.1	146 35.6	10.8	154 02.1	17.1	Peacock	54 21.0	S 56 51.7	
	03	106 50.9	244 02.9	09.0	222 07.8	49.4	161 37.6	10.7	169 04.3	17.1	Pollux	244 15.2	N 28 07.0	
	04	121 53.3	259 02.2	10.0	237 08.3	49.7	176 39.6	10.6	184 06.5	17.0	Procyon	245 40.4	N 5 19.4	
	05	136 55.8	274 01.6	11.0	252 08.9	50.1	191 41.7	10.5	199 08.8	17.0				
	06	151 58.3	289 01.0	S 15 12.0	267 09.4	S 21 50.4	206 43.7	S 20 10.4	214 11.0	S 21 17.0	Rasalhague	96 43.0	N 12 35.4	
	07	167 00.7	304 00.4	13.0	282 10.0	50.7	221 45.7	10.3	229 13.3	16.9	Regulus	208 25.1	N 12 09.3	
	08	182 03.2	318 59.7	13.9	297 10.5	51.0	236 47.7	10.2	244 15.5	16.9	Rigel	281 49.3	S 8 14.7	
	09	197 05.6	333 59.1	14.9	312 11.1	51.4	251 49.8	10.1	259 17.8	16.9	Rigel Kent.	140 45.7	S 60 40.4	
	10	212 08.1	348 58.5	15.9	327 11.6	51.7	266 51.8	10.0	274 20.0	16.8	Sabik	102 57.7	S 15 40.6	
	11	227 10.6	3 57.9	16.9	342 12.1	52.0	281 53.8	09.9	289 22.2	16.8				
	12	242 13.0	18 57.2	S 15 17.8	357 12.7	S 21 52.4	296 55.9	S 20 09.8	304 24.5	S 21 16.7	Schedar	350 24.7	N 56 19.9	
	13	257 15.5	33 56.6	18.8	12 13.2	52.7	311 57.9	09.7	319 26.7	16.7	Shaula	97 15.4	S 37 04.5	
	14	272 18.0	48 56.0	19.8	27 13.8	53.0	326 59.9	09.6	334 29.0	16.7	Sirius	259 07.9	S 16 39.7	
	15	287 20.4	63 55.4	20.8	42 14.3	53.3	342 02.0	09.6	349 31.2	16.6	Spica	159 12.7	S 10 57.5	
	16	302 22.9	78 54.7	21.7	57 14.8	53.7	357 04.0	09.5	4 33.4	16.6	Suhail	223 21.0	S 43 16.4	
	17	317 25.4	93 54.1	22.7	72 15.4	54.0	12 06.0	09.4	19 35.7	16.6				
	18	332 27.8	108 53.5	S 15 23.7	87 15.9	S 21 54.3	27 08.1	S 20 09.3	34 37.9	S 21 16.5	Vega	81 05.7	N 38 45.1	
	19	347 30.3	123 52.9	24.6	102 16.5	54.6	42 10.1	09.2	49 40.2	16.5	Zuben'ubi	137 49.0	S 15 52.8	
	20	2 32.8	138 52.2	25.6	117 17.0	55.0	57 12.1	09.1	64 42.4	16.4				
	21	17 35.2	153 51.6	26.6	132 17.6	55.3	72 14.1	09.0	79 44.7	16.4				
	22	32 37.7	168 51.0	27.5	147 18.1	55.6	87 16.2	08.9	94 46.9	16.4	Venus	138 35.2	10 43	
	23	47 40.1	183 50.3	28.5	162 18.6	56.0	102 18.2	08.8	109 49.1	16.3	Mars	116 08.7	12 12	
Mer. Pass. 19 53.8		v -0.6	d 1.0	v 0.5	d 0.3	v 2.0	d 0.1	v 2.2	d 0.0	Jupiter	54 58.3	16 15		
										Saturn	62 19.4	15 45		

G.M.T.	SUN		MOON					Lat.	Twilight		Sun-rise	Moonrise																										
	G.H.A.		v.	Dec.		d	H.P.		Naut.	Civil		21	22	23	24																							
	°	'		°	'						°	'	h	m	h	m	h	m	h	m																		
TUESDAY	00	183 33.4 S 19 48.9	20 07.8 9.7	N 10 18.1 10.1	58.5	N 72	07 23	09 07	14 18	14 01	13 10																											
	01	198 33.3 49.4	34 36.5 9.6	10 28.2 10.0	58.5	N 70	07 10	08 38	10 43	14 40	14 38	14 38	14 44																									
	02	213 33.1 50.0	49 05.1 9.7	10 38.2 9.9	58.5	68	06 59	08 16	09 46	14 57	15 04	15 17	15 43																									
	03	228 33.0 50.5	63 33.8 9.6	10 48.1 9.9	58.4	66	06 51	07 59	09 13	15 11	15 24	15 45	16 17																									
	04	243 32.8 51.1	78 02.4 9.6	10 58.0 9.8	58.4	64	06 43	07 45	08 49	15 22	15 41	16 06	16 42																									
	05	258 32.7 51.6	92 31.0 9.6	11 07.8 9.7	58.4	62	06 36	07 33	08 30	15 32	15 54	16 23	17 02																									
	06	273 32.5 S 19 52.2	106 59.6 9.6	N 11 17.5 9.7	58.4	60	06 30	07 23	08 15	15 41	16 06	16 37	17 18																									
	07	288 32.4 52.8	121 28.2 9.5	11 27.2 9.6	58.4	N 58	06 25	07 14	08 01	15 48	16 16	16 50	17 31																									
	08	303 32.2 53.3	135 56.7 9.6	11 36.8 9.5	58.3	56	06 20	07 06	07 50	15 55	16 24	17 00	17 43																									
	09	318 32.1 53.9	150 25.3 9.5	11 46.3 9.5	58.3	54	06 15	06 59	07 40	16 01	16 32	17 10	17 54																									
	10	333 31.9 54.4	164 53.8 9.5	11 55.8 9.3	58.3	52	06 11	06 53	07 31	16 06	16 39	17 18	18 03																									
	11	348 31.7 55.0	179 22.3 9.5	12 05.1 9.3	58.3	50	06 07	06 47	07 23	16 11	16 46	17 25	18 11																									
	12	3 31.6 S 19 55.5	193 50.8 9.5	N 12 14.4 9.3	58.3	N 40	05 50	06 23	06 53	16 30	17 11	17 55	18 43																									
	13	18 31.4 56.1	208 19.3 9.5	12 23.7 9.1	58.2	35	05 43	06 14	06 41	16 38	17 20	18 06	18 55																									
	14	33 31.3 56.6	222 47.8 9.4	12 32.8 9.1	58.2	30	05 36	06 05	06 30	16 45	17 29	18 16	19 05																									
	15	48 31.1 57.2	237 16.2 9.4	12 41.9 9.0	58.2	20	05 23	05 49	06 13	16 56	17 44	18 33	19 23																									
	16	63 31.0 57.7	251 44.6 9.4	12 50.9 8.9	58.2	N 10	05 09	05 35	05 57	17 07	17 57	18 48	19 39																									
17	78 30.8 58.3	266 13.0 9.4	12 59.8 8.8	58.2	0	04 55	05 21	05 42	17 16	18 09	19 02	19 54																										
WEDNESDAY	18	93 30.6 S 19 58.8	280 41.4 9.4	N 13 08.6 8.8	58.1	S 10	04 39	05 05	05 28	17 26	18 21	19 16	20 09																									
	19	108 30.5 59.4	295 09.8 9.4	13 17.4 8.6	58.1	20	04 19	04 48	05 12	17 37	18 35	19 31	20 26																									
	20	123 30.3 19 59.9	309 38.2 9.4	13 26.0 8.6	58.1	30	03 55	04 27	04 53	17 49	18 50	19 48	20 44																									
	21	138 30.2 20 00.5	324 06.6 9.3	13 34.6 8.5	58.1	35	03 39	04 14	04 42	17 55	18 58	19 58	20 55																									
	22	153 30.0 01.0	338 34.9 9.3	13 43.1 8.5	58.0	40	03 20	03 59	04 30	18 03	19 08	20 10	21 07																									
	23	168 29.8 01.5	353 03.2 9.3	13 51.6 8.3	58.0	45	02 55	03 40	04 15	18 13	19 20	20 23	21 21																									
	00	183 29.7 S 20 02.1	7 31.5 9.3	N 13 59.9 8.2	58.0	S 50	02 21	03 16	03 57	18 24	19 34	20 40	21 39																									
	01	198 29.5 02.6	21 59.8 9.3	14 08.1 8.2	58.0	52	02 03	03 04	03 48	18 29	19 41	20 48	21 47																									
	02	213 29.4 03.2	36 28.1 9.3	14 16.3 8.1	58.0	54	01 40	02 51	03 38	18 35	19 49	20 57	21 57																									
	03	228 29.2 03.7	50 56.4 9.2	14 24.4 8.0	57.9	56	01 08	02 35	03 27	18 41	19 57	21 07	22 07																									
	04	243 29.0 04.3	65 24.6 9.3	14 32.4 7.9	57.9	58	///	02 16	03 15	18 49	20 07	21 18	22 19																									
	05	258 28.9 04.8	79 52.9 9.2	14 40.3 7.8	57.9	S 60	///	01 51	03 00	18 57	20 17	21 31	22 33																									
	06	273 28.7 S 20 05.3	94 21.1 9.2	N 14 48.1 7.7	57.9	<table><tr><th>Lat.</th><th>Sun-set</th><th colspan="2">Twilight</th><th colspan="4">Moonset</th></tr><tr><th></th><th></th><th>Civil</th><th>Naut.</th><th>21</th><th>22</th><th>23</th><th>24</th></tr><tr><th>°</th><th>h m</th><th>h m</th><th>h m</th><th>h m</th><th>h m</th><th>h m</th><th>h m</th></tr></table>									Lat.	Sun-set	Twilight		Moonset						Civil	Naut.	21	22	23	24	°	h m	h m	h m	h m	h m	h m	h m
	Lat.	Sun-set	Twilight		Moonset																																	
			Civil	Naut.	21	22	23	24																														
	°	h m	h m	h m	h m	h m	h m	h m																														
	07	288 28.6 05.9	108 49.3 9.2	14 55.8 7.6	57.8	N 72	12 49	14 54	16 21	07 08	08 59	10 50	12 34																									
08	303 28.4 06.4	123 17.5 9.2	15 03.4 7.6	57.8	N 70	13 46	15 15	16 32	06 52	08 34	10 11	11 35																										
09	318 28.2 07.0	137 45.7 9.2	15 11.0 7.4	57.8	68	14 19	15 32	16 41	06 39	08 15	09 44	11 01																										
10	333 28.1 07.5	152 13.9 9.2	15 18.4 7.4	57.8	66	14 43	15 46	16 49	06 29	07 59	09 23	10 36																										
11	348 27.9 08.0	166 42.1 9.2	15 25.8 7.2	57.7	64	15 02	15 58	16 56	06 20	07 46	09 06	10 17																										
12	3 27.7 S 20 08.6	181 10.3 9.1	N 15 33.0 7.2	57.7	62	15 17	16 08	17 02	06 12	07 35	08 53	10 01																										
13	18 27.6 09.1	195 38.4 9.1	15 40.2 7.1	57.7	N 58	15 30	16 17	17 07	06 06	07 26	08 41	09 48																										
14	33 27.4 09.6	210 06.5 9.2	15 47.3 6.9	57.7	56	15 42	16 25	17 12	06 00	07 17	08 30	09 36																										
15	48 27.2 10.2	224 34.7 9.1	15 54.2 6.9	57.6	54	15 52	16 32	17 17	05 55	07 10	08 21	09 26																										
16	63 27.1 10.7	239 02.8 9.1	16 01.1 6.8	57.6	52	16 00	16 39	17 21	05 50	07 04	08 13	09 17																										
17	78 26.9 11.2	253 30.9 9.1	16 07.9 6.7	57.6	50	16 08	16 45	17 25	05 45	06 58	08 06	09 09																										
18	93 26.7 S 20 11.8	267 59.0 9.1	N 16 14.6 6.6	57.6	45	16 25	16 58	17 34	05 36	06 45	07 51	08 52																										
19	108 26.6 12.3	282 27.1 9.1	16 21.2 6.4	57.5	N 40	16 39	17 09	17 42	05 28	06 34	07 38	08 38																										
20	123 26.4 12.8	296 55.2 9.1	16 27.6 6.4	57.5	35	16 51	17 18	17 49	05 22	06 26	07 27	08 26																										
21	138 26.2 13.4	311 23.3 9.1	16 34.0 6.3	57.5	30	17 01	17 27	17 56	05 16	06 18	07 18	08 16																										
22	153 26.1 13.9	325 51.4 9.1	16 40.3 6.2	57.5	20	17 19	17 43	18 10	05 06	06 04	07 02	07 57																										
23	168 25.9 14.4	340 19.5 9.0	16 46.5 6.1	57.4	N 10	17 35	17 57	18 23	04 57	05 52	06 48	07 42																										
THURSDAY	00	183 25.7 S 20 14.9	354 47.5 9.1	N 16 52.6 6.0	57.4	0	17 50	18 12	18 37	04 49	05 41	06 34	07 27																									
	01	198 25.6 15.5	9 15.6 9.1	16 58.6 5.9	57.4	S 10	18 05	18 27	18 54	04 41	05 30	06 21	07 13																									
	02	213 25.4 16.0	23 43.7 9.0	17 04.5 5.8	57.3	20	18 21	18 45	19 13	04 32	05 18	06 07	06 57																									
	03	228 25.2 16.5	38 11.7 9.1	17 10.3 5.7	57.3	30	18 39	19 06	19 38	04 22	05 05	05 51	06 39																									
	04	243 25.0 17.1	52 39.8 9.0	17 16.0 5.5	57.3	35	18 50	19 19	19 54	04 16	04 57	05 41	06 29																									
	05	258 24.9 17.6	67 07.8 9.1	17 21.5 5.5	57.3	40	19 03	19 34	20 13	04 10	04 49	05 31	06 17																									
	06	273 24.7 S 20 18.1	81 35.9 9.0	N 17 27.0 5.4	57.2	45	19 18	19 53	20 38	04 02	04 38	05 18	06 03																									
	07	288 24.5 18.6	96 03.9 9.1	17 32.4 5.3	57.2	S 50	19 37	20 17	21 13	03 53	04 26	05 03	05 46																									
	08	303 24.4 19.1	110 32.0 9.0	17 37.7 5.1	57.2	52	19 45	20 29	21 31	03 49	04 20	04 56	05 38																									
	09	318 24.2 19.7	125 00.0 9.1	17 42.8 5.1	57.2	54	19 55	20 43	21 55	03 45	04 14	04 48	05 29																									
	10	333 24.0 20.2	139 28.1 9.0	17 47.9 4.9	57.1	56	20 06	20 59	22 29	03 40	04 07	04 39	05 19																									
	11	348 23.8 20.7	153 56.1 9.1	17 52.8 4.9	57.1	58	20 19	21 19	///	03 34	03 59	04 29	05 07																									
	12	3 23.7 S 20 21.2	168 24.2 9.1	N 17 57.7 4.7	57.1	S 60	20 34	21 44	///	03 28	03 50	04 18	04 54																									
	13	18 23.5 21.8	182 52.3 9.0	18 02.4 4.7	57.1	<table><tr><th colspan="4">SUN</th><th colspan="4">MOON</th></tr><tr><th>Day</th><th>Eqn. of Time</th><th>12h</th><th>Mer. Pass.</th><th>Mer. Upper</th><th>Pass. Lower</th><th>Age</th><th>Phase</th></tr><tr><th></th><th>m s</th><th>m s</th><th>h m</th><th>h m</th><th>h m</th><th>d</th><th></th></tr></table>								SUN				MOON				Day	Eqn. of Time	12h	Mer. Pass.	Mer. Upper	Pass. Lower	Age	Phase		m s	m s	h m	h m	h m	d		
	SUN				MOON																																	
	Day	Eqn. of Time	12h	Mer. Pass.	Mer. Upper	Pass. Lower	Age	Phase																														
		m s	m s	h m	h m	h m	d																															
14	33 23.3 22.3	197 20.3 9.1	18 07.1 4.5	57.0	21	14 14	14 07	11 46	23 29	11 03	13																											
15	48 23.2 22.8	211 48.4 9.1	18 11.6 4.5	57.0	22	13 59	13 51	11 46	24 22	11 55	14																											
16	63 23.0 23.3	226 16.5 9.0	18 16.1 4.3	57.0	23	13 43	13 35	11 46	00 22	12 48	15																											
17	78 22.8 23.8	240 44.5 9.1	18 20.4 4.2	56.9																																		
18	93 22.6 S 20 24.3	255 12.6 9.1	N 18 24.6 4.1	56.9																																		
19	108 22.5 24.9	269 40.7 9.1	18 28.7 4.0	56.9																																		
20	123 22.3 25.4	284 08.8 9.1	18 32.7 3.9	56.9																																		
21	138 22.1 25.9	298 36.9 9.1	18 36.6 3.8	56.8																																		
22	153 21.9 26.4	313 05.0 9.2	18 40.4 3.7	56.8																																		
23	168 21.8 26.9	327 33.2 9.1	18 44.1 3.6	56.8																																		
<table><tr><td>S.D.</td><td>16.2</td><td>d</td><td>0.5</td><td>S.D.</td><td>15.9</td><td>15.7</td><td>15.6</td></tr></table>														S.D.	16.2	d	0.5	S.D.	15.9	15.7	15.6																	
S.D.	16.2	d	0.5	S.D.	15.9	15.7	15.6																															

G.M.T.	ARIES			VENUS -3.4			MARS +1.6			JUPITER -1.7			SATURN +0.8			STARS		
	G.H.A.	G.H.A.	Dec.	G.H.A.	G.H.A.	Dec.	G.H.A.	G.H.A.	Dec.	G.H.A.	G.H.A.	Dec.	G.H.A.	G.H.A.	Dec.	Name	S.H.A.	Dec.
d h																		
24 00	62 42.6	198 49.7	S15 29.5	177 19.2	S21 56.3		117 20.2	S20 08.7		124 51.4	S21 16.3		Acamar	315 47.5	S 40 27.6			
01	77 45.1	213 49.1	30.4	192 19.7	56.6		132 22.3	08.6		139 53.6	16.3		Achernar	335 55.4	S 57 26.1			
02	92 47.5	228 48.4	31.4	207 20.2	56.9		147 24.3	08.5		154 55.9	16.2		Acrux	173 53.3	S 62 52.9			
03	107 50.0	243 47.8	32.4	222 20.8	57.2		162 26.3	08.4		169 58.1	16.2		Adhara	255 42.9	S 28 55.1			
04	122 52.5	258 47.2	33.3	237 21.3	57.6		177 28.3	08.3		185 00.3	16.2		Aldebaran	291 33.9	N 16 26.0			
05	137 54.9	273 46.5	34.3	252 21.9	57.9		192 30.4	08.2		200 02.6	16.1							
06	152 57.4	288 45.9	S15 35.3	267 22.4	S21 58.2		207 32.4	S20 08.1		215 04.8	S21 16.1		Alioth	166 55.3	N 56 09.9			
07	167 59.9	303 45.3	36.2	282 22.9	58.5		222 34.4	08.0		230 07.1	16.0		Alkaid	153 30.1	N 49 30.2			
08	183 02.3	318 44.6	37.2	297 23.5	58.9		237 36.5	07.9		245 09.3	16.0		Al Na'ir	28 32.8	S 47 09.0			
09	198 04.8	333 44.0	38.1	312 24.0	59.2		252 38.5	07.8		260 11.5	16.0		Alnilam	276 25.7	S 1 13.5			
10	213 07.3	348 43.4	39.1	327 24.6	59.5		267 40.5	07.7		275 13.8	15.9		Alphard	218 34.4	S 8 29.5			
11	228 09.7	363 42.7	40.1	342 25.1	59.8		282 42.5	07.6		290 16.0	15.9							
12	243 12.2	378 42.1	S15 41.0	357 25.6	S22 00.1		297 44.6	S20 07.5		305 18.3	S21 15.9		Alphecca	126 44.5	N 26 50.7			
13	258 14.6	393 41.4	42.0	372 26.1	00.5		312 46.6	07.4		320 20.5	15.8		Alpheratz	358 23.7	N 28 52.9			
14	273 17.1	408 40.8	42.9	387 26.7	00.8		327 48.6	07.3		335 22.7	15.8		Altair	62 46.5	N 8 46.2			
15	288 19.6	423 40.2	43.9	402 27.2	01.1		342 50.6	07.2		350 25.0	15.7		Ankaa	353 54.0	S 42 31.0			
16	303 22.0	438 39.5	44.9	417 27.8	01.4		357 52.7	07.1		5 27.2	15.7		Antares	113 14.6	S 26 20.7			
17	318 24.5	453 38.9	45.8	432 28.3	01.7		372 54.7	07.0		20 29.4	15.7							
18	333 27.0	468 38.2	S15 46.8	447 28.8	S22 02.0		387 56.7	S20 06.9		35 31.7	S21 15.6		Arcturus	146 31.7	N 19 22.9			
19	348 29.4	483 37.6	47.7	462 29.4	02.4		402 58.7	06.8		50 33.9	15.6		Atria	108 52.0	S 68 57.5			
20	363 31.9	498 37.0	48.7	477 29.9	02.7		417 60.8	06.7		65 36.2	15.6		Avior	234 33.6	S 59 22.9			
21	378 34.4	513 36.3	49.6	492 30.4	03.0		432 62.8	06.6		80 38.4	15.5		Bellatrix	279 13.6	N 6 18.9			
22	393 36.8	528 35.7	50.6	507 31.0	03.3		447 64.8	06.5		95 40.6	15.5		Betelgeuse	271 43.3	N 7 24.0			
23	408 39.3	543 35.0	51.5	522 31.5	03.6		462 66.8	06.4		110 42.9	15.4							
25 00	63 41.8	198 34.4	S15 52.5	177 32.0	S22 03.9		118 08.9	S20 06.3		125 45.1	S21 15.4		Canopus	264 13.0	S 52 40.4			
01	78 44.2	213 33.7	53.4	192 32.6	04.3		133 10.9	06.2		140 47.3	15.4		Capella	281 31.7	N 45 57.5			
02	93 46.7	228 33.1	54.4	207 33.1	04.6		148 12.9	06.1		155 49.6	15.3		Deneb	49 58.3	N 45 08.9			
03	108 49.1	243 32.5	55.3	222 33.6	04.9		163 14.9	06.0		170 51.8	15.3		Denebola	183 13.6	N 14 47.2			
04	123 51.6	258 31.8	56.3	237 34.2	05.2		178 16.9	05.9		185 54.1	15.3		Diphda	349 34.8	S 18 11.9			
05	138 54.1	273 31.2	57.2	252 34.7	05.5		193 19.0	05.8		200 56.3	15.2							
06	153 56.5	288 30.5	S15 58.2	267 35.2	S22 05.8		208 21.0	S20 05.7		215 58.5	S21 15.2		Dubhe	194 39.7	N 61 57.2			
07	168 59.0	303 29.9	59.1	282 35.8	06.1		223 23.0	05.6		231 00.8	15.1		Elnath	279 01.6	N 28 34.5			
08	184 01.5	318 29.2	60.0	297 36.3	06.5		238 25.0	05.5		246 03.0	15.1		Eltanin	91 04.8	N 51 29.8			
09	199 03.9	333 28.6	61.0	312 36.8	06.8		253 27.1	05.4		261 05.2	15.1		Enif	34 25.5	N 9 42.1			
10	214 06.4	348 27.9	61.9	327 37.4	07.1		268 29.1	05.3		276 07.5	15.0		Fomalhaut	16 07.0	S 29 49.6			
11	229 08.9	363 27.3	62.9	342 37.9	07.4		283 31.1	05.2		291 09.7	15.0							
12	244 11.3	378 26.6	S16 03.8	357 38.4	S22 07.7		298 33.1	S20 05.1		306 11.9	S21 14.9		Gacrux	172 44.7	S 56 53.6			
13	259 13.8	393 26.0	04.8	372 39.0	08.0		313 35.1	05.0		321 14.2	14.9		Gienah	176 32.7	S 17 19.6			
14	274 16.3	408 25.3	05.7	387 39.5	08.3		328 37.2	04.9		336 16.4	14.9		Hadar	149 43.9	S 60 11.1			
15	289 18.7	423 24.7	06.6	402 40.0	08.6		343 39.2	04.8		351 18.7	14.8		Hamal	328 44.5	N 23 17.0			
16	304 21.2	438 24.0	07.6	417 40.6	09.0		358 41.2	04.7		6 20.9	14.8		Kaus Aust.	84 35.9	S 34 24.2			
17	319 23.6	453 23.4	08.5	432 41.1	09.3		373 43.2	04.6		21 23.1	14.8							
18	334 26.1	468 22.7	S16 09.4	447 41.6	S22 09.6		388 45.2	S20 04.5		36 25.4	S21 14.7		Kochab	137 19.5	N 74 18.7			
19	349 28.6	483 22.1	10.4	462 42.1	09.9		403 47.3	04.4		51 27.6	14.7		Markab	14 17.2	N 15 00.1			
20	364 31.1	498 21.4	11.3	477 42.7	10.2		418 49.3	04.3		66 29.8	14.6		Menkar	314 55.6	N 3 56.4			
21	379 33.5	513 20.7	12.3	492 43.2	10.5		433 51.3	04.2		81 32.1	14.6		Menkent	148 54.0	S 36 10.7			
22	394 36.0	528 20.1	13.2	507 43.7	10.8		448 53.3	04.1		96 34.3	14.6		Miaplacidus	221 47.6	S 69 33.3			
23	409 38.4	543 19.4	14.1	522 44.3	11.1		463 55.3	04.0		111 36.5	14.5							
26 00	64 40.9	198 18.8	S16 15.1	177 44.8	S22 11.4		118 57.4	S20 03.9		126 38.8	S21 14.5		Mirfak	309 35.8	N 49 43.6			
01	79 43.4	213 18.1	16.0	192 45.3	11.7		133 59.4	03.8		141 41.0	14.5		Nunki	76 47.0	S 26 20.7			
02	94 45.8	228 17.5	16.9	207 45.8	12.0		149 01.4	03.7		156 43.2	14.4		Peacock	54 21.0	S 56 51.7			
03	109 48.3	243 16.8	17.8	222 46.4	12.3		164 03.4	03.6		171 45.5	14.4		Pollux	244 15.2	N 28 07.0			
04	124 50.7	258 16.1	18.8	237 46.9	12.6		179 05.4	03.5		186 47.7	14.3		Procyon	245 40.4	N 5 19.4			
05	139 53.2	273 15.5	19.7	252 47.4	13.0		194 07.5	03.4		201 49.9	14.3							
06	154 55.7	288 14.8	S16 20.6	267 48.0	S22 13.3		209 09.5	S20 03.3		216 52.2	S21 14.3		Rasalhague	96 43.0	N 12 35.4			
07	169 58.1	303 14.2	21.6	282 48.5	13.6		224 11.5	03.2		231 54.4	14.2		Regulus	208 25.0	N 12 09.2			
08	185 00.6	318 13.5	22.5	297 49.0	13.9		239 13.5	03.1		246 56.6	14.2		Rigel	281 49.3	S 8 14.7			
09	200 03.1	333 12.8	23.4	312 49.5	14.2		254 15.5	03.0		261 58.9	14.1		Rigel Kent.	140 45.7	S 60 40.4			
10	215 05.5	348 12.2	24.3	327 50.1	14.5		269 17.5	02.9		277 01.1	14.1		Sabik	102 57.7	S 15 40.6			
11	230 08.0	363 11.5	25.3	342 50.6	14.8		284 19.6	02.8		292 03.3	14.1							
12	245 10.5	378 10.9	S16 26.2	357 51.1	S22 15.1		299 21.6	S20 02.7		307 05.6	S21 14.0		Schedar	350 24.7	N 56 19.9			
13	260 12.9	393 10.2	27.1	372 51.6	15.4		314 23.6	02.6		322 07.8	14.0		Shaula	97 15.4	S 37 04.5			
14	275 15.4	408 09.5	28.0	387 52.2	15.7		329 25.6	02.5		337 10.0	13.9		Sirius	259 07.9	S 16 39.7			
15	290 17.9	423 08.9	29.0	402 52.7	16.0		344 27.6	02.4		352 12.3	13.9		Spica	159 12.7	S 10 57.5			
16	305 20.3	438 08.2	29.9	417 53.2	16.3		359 29.6	02.3		7 14.5	13.9		Suhail	223 21.0	S 43 16.4			
17	320 22.8	453 07.5	30.8	432 53.7	16.6		374 31.7	02.2		22 16.7	13.8							
18	335 25.2	468 06.9	S16 31.7	447 54.3	S22 16.9		389 33.7	S20 02.1		37 19.0	S21 13.8		Vega	81 05.7	N 38 45.1			
19	350 27.7	483 06.2	32.6	462 54.8	17.2		404 35.7	02.0		52 21.2	13.8		Zuben'ubi	137 49.0	S 15 52.8			
20	5 30.2	498 05.5	33.6	477 55.3	17.5		419 37.7	01.9		67 23.4	13.7							
21	20 32.6	513 04.9	34.5	492 55.8	17.8		434 39.7	01.8		82 25.7	13.7		Venus	134 52.6	10 46		</	

G.M.T.		SUN		MOON				Lat.	Twilight		Sun-rise	Moonrise									
		G.H.A.	Dec.	G.H.A.	φ	Dec.	d		H.P.	Naut.		Civil	24	25	26	27					
d	h	°	'	°	'	°	'	°	'	h	m	h	m	h	m	h	m	h	m		
24	00	183	21.6	S20	27.4	342	01.3	9.1	N18	47.7	3.4	56.8	N72	07 33	09 21	■	□	□	17 29		
	01	198	21.4		27.9	356	29.4	9.2	18	51.1	3.4	56.7	N70	07 19	08 49	11 26	14 44	15 21	16 48	18 26	
	02	213	21.2		28.5	10	57.6	9.2	18	54.5	3.2	56.7	68	07 07	08 26	10 02	15 43	16 29	17 38	19 01	
	03	228	21.0		29.0	25	25.8	9.2	18	57.7	3.2	56.7	66	06 58	08 07	09 24	16 17	17 06	18 10	19 25	
	04	243	20.9		29.5	39	54.0	9.2	19	00.9	3.0	56.6	64	06 49	07 53	08 58	16 42	17 31	18 33	19 44	
FRI	05	258	20.7		30.0	54	22.2	9.2	19	03.9	2.9	56.6	62	06 42	07 40	08 38	17 02	17 52	18 52	20 00	
	06	273	20.5	S20	30.5	68	50.4	9.2	N19	06.8	2.9	56.6	60	06 36	07 29	08 22	17 18	18 08	19 07	20 12	
	07	288	20.3		31.0	83	18.6	9.3	19	09.7	2.7	56.6	N58	06 30	07 20	08 08	17 31	18 22	19 20	20 23	
	08	303	20.2		31.5	97	46.9	9.3	19	12.4	2.6	56.5	56	06 25	07 11	07 56	17 43	18 34	19 31	20 33	
	09	318	20.0		32.0	112	15.1	9.3	19	15.0	2.5	56.5	54	06 20	07 04	07 45	17 54	18 44	19 41	20 42	
DAY	10	333	19.8		32.5	126	43.4	9.3	19	17.5	2.4	56.5	52	06 15	06 57	07 36	18 03	18 54	19 50	20 49	
	11	348	19.6		33.0	141	11.7	9.3	19	19.9	2.2	56.4	50	06 11	06 51	07 28	18 11	19 02	19 58	20 56	
	12	3	19.4	S20	33.5	155	40.0	9.4	N19	22.1	2.2	56.4	45	06 02	06 38	07 10	18 28	19 19	20 14	21 11	
	13	18	19.2		34.0	170	08.4	9.3	19	24.3	2.1	56.4	N40	05 53	06 26	06 56	18 43	19 34	20 28	21 23	
	14	33	19.1		34.5	184	36.7	9.4	19	26.4	1.9	56.4	35	05 45	06 16	06 44	18 55	19 46	20 39	21 33	
SAT	15	48	18.9		35.0	199	05.1	9.4	19	28.3	1.9	56.3	30	05 38	06 07	06 33	19 05	19 57	20 49	21 42	
	16	63	18.7		35.5	213	33.5	9.4	19	30.2	1.7	56.3	20	05 24	05 51	06 15	19 23	20 15	21 07	21 58	
	17	78	18.5		36.0	228	01.9	9.5	19	31.9	1.6	56.3	N10	05 10	05 36	05 59	19 39	20 31	21 22	22 11	
	18	93	18.3	S20	36.5	242	30.4	9.4	N19	33.5	1.6	56.3	0	04 56	05 21	05 43	19 54	20 46	21 36	22 24	
	19	108	18.2		37.0	256	58.8	9.5	19	35.1	1.4	56.2	S10	04 39	05 05	05 28	20 09	21 01	21 50	22 36	
SUN	20	123	18.0		37.5	271	27.3	9.5	19	36.5	1.3	56.2	20	04 19	04 47	05 11	20 26	21 17	22 05	22 50	
	21	138	17.8		38.0	285	55.8	9.6	19	37.8	1.2	56.2	30	03 54	04 26	04 52	20 44	21 36	22 23	23 05	
	22	153	17.6		38.5	300	24.4	9.6	19	39.0	1.1	56.1	35	03 37	04 12	04 41	20 55	21 46	22 32	23 14	
	23	168	17.4		39.0	314	53.0	9.6	19	40.1	1.0	56.1	40	03 17	03 57	04 28	21 07	21 58	22 44	23 24	
	24	183	17.2	S20	39.5	329	21.6	9.6	N19	41.1	0.9	56.1	45	02 52	03 37	04 13	21 21	22 12	22 57	23 36	
MON	01	198	17.0		40.0	343	50.2	9.7	19	42.0	0.8	56.1	S50	02 16	03 13	03 54	21 39	22 30	23 13	23 50	
	02	213	16.9		40.5	358	18.9	9.7	19	42.8	0.6	56.0	52	01 56	03 00	03 45	21 47	22 38	23 21	23 57	
	03	228	16.7		41.0	12	47.6	9.7	19	43.4	0.6	56.0	54	01 32	02 46	03 35	21 57	22 48	23 30	24 04	
	04	243	16.5		41.5	27	16.3	9.7	19	44.0	0.5	56.0	56	00 55	02 29	03 23	22 07	22 58	23 39	24 12	
	05	258	16.3		42.0	41	45.0	9.8	19	44.5	0.3	56.0	58	///	02 08	03 10	22 19	23 10	23 50	24 21	
TUE	06	273	16.1	S20	42.5	56	13.8	9.8	N19	44.8	0.3	55.9	S60	///	01 41	02 54	22 33	23 24	24 03	00 03	
	07	288	15.9		43.0	70	42.6	9.9	19	45.1	0.1	55.9	Lat.	Sun-set	Twilight	Moonset					
	08	303	15.7		43.5	85	11.5	9.8	19	45.2	0.1	55.9			Civil	Naut.	24	25	26	27	
	09	318	15.6		44.0	99	40.3	9.9	19	45.3	0.1	55.9	h	m	h	m	h	m	h	m	
	10	333	15.4		44.5	114	09.2	10.0	19	45.2	0.2	55.8	N72	14 12	16 00	18 00	□	□	□	15 04	
WED	11	348	15.2		45.0	128	38.2	10.0	19	45.0	0.2	55.8	N70	12 07	14 44	16 15	12 34	13 45	14 03	14 05	
	12	3	15.0	S20	45.5	143	07.2	10.0	N19	44.8	0.4	55.8	68	13 32	15 08	16 26	11 35	12 37	13 12	13 30	
	13	18	14.8		45.9	157	36.2	10.0	19	44.4	0.5	55.8	66	14 09	15 26	16 36	11 01	12 01	12 40	13 05	
	14	33	14.6		46.4	172	05.2	10.1	19	43.9	0.6	55.7	64	14 35	15 41	16 44	10 36	11 35	12 17	12 46	
	15	48	14.4		46.9	186	34.3	10.2	19	43.3	0.6	55.7	62	14 56	15 53	16 51	10 17	11 14	11 58	12 30	
THU	16	63	14.2		47.4	201	03.5	10.1	19	42.7	0.8	55.7	60	15 12	16 04	16 58	10 01	10 58	11 43	12 16	
	17	78	14.0		47.9	215	32.6	10.2	19	41.9	0.9	55.7	N58	15 26	16 14	17 04	09 48	10 44	11 29	12 05	
	18	93	13.8	S20	48.4	230	01.8	10.3	N19	41.0	1.0	55.6	56	15 38	16 22	17 09	09 36	10 32	11 18	11 55	
	19	108	13.7		48.9	244	31.1	10.3	19	40.0	1.0	55.6	54	15 48	16 29	17 14	09 26	10 22	11 08	11 46	
	20	123	13.5		49.3	259	00.4	10.3	19	39.0	1.2	55.6	52	15 57	16 36	17 18	09 17	10 12	10 59	11 38	
FRI	21	138	13.3		49.8	273	29.7	10.3	19	37.8	1.3	55.6	50	16 06	16 42	17 23	09 09	10 04	10 51	11 31	
	22	153	13.1		50.3	287	59.0	10.4	19	36.5	1.4	55.5	45	16 23	16 56	17 32	08 52	09 46	10 34	11 16	
	23	168	12.9		50.8	302	28.4	10.5	19	35.1	1.5	55.5	N40	16 38	17 07	17 41	08 38	09 32	10 20	11 03	
	24	183	12.7	S20	51.3	316	57.9	10.5	N19	33.6	1.5	55.5	35	16 50	17 17	17 48	08 26	09 20	10 09	10 53	
	01	198	12.5		51.7	331	27.4	10.5	19	32.1	1.7	55.5	30	17 01	17 27	17 56	08 16	09 09	09 58	10 43	
SAT	02	213	12.3		52.2	345	56.9	10.6	19	30.4	1.8	55.4	20	17 19	17 43	18 10	07 57	08 51	09 41	10 27	
	03	228	12.1		52.7	0	26.5	10.6	19	28.6	1.8	55.4	N10	17 35	17 58	18 24	07 42	08 35	09 25	10 13	
	04	243	11.9		53.2	14	56.1	10.6	19	26.8	2.0	55.4	0	17 51	18 13	18 39	07 27	08 19	09 10	09 59	
	05	258	11.7		53.7	29	25.7	10.7	19	24.8	2.1	55.4	S10	18 06	18 29	18 55	07 13	08 04	08 56	09 46	
	06	273	11.5	S20	54.1	43	55.4	10.8	N19	22.7	2.1	55.3	20	18 23	18 47	19 15	06 57	07 48	08 40	09 31	
SUN	07	288	11.3		54.6	58	25.2	10.8	19	20.6	2.3	55.3	30	18 42	19 09	19 41	06 39	07 29	08 22	09 15	
	08	303	11.1		55.1	72	55.0	10.8	19	18.3	2.3	55.3	35	18 53	19 22	19 57	06 29	07 19	08 11	09 05	
	09	318	10.9		55.6	87	24.8	10.9	19	16.0	2.5	55.3	40	19 06	19 38	20 17	06 17	07 07	07 59	08 54	
	10	333	10.7		56.0	101	54.7	10.9	19	13.5	2.5	55.3	45	19 22	19 57	20 43	06 03	06 52	07 45	08 41	
	11	348	10.5		56.5	116	24.6	11.0	19	11.0	2.6	55.2	S50	19 41	20 23	21 20	05 46	06 34	07 28	08 25	
MON	12	3	10.4	S20	57.0	130	54.6	11.0	N19	08.4	2.7	55.2	52	19 50	20 35	21 40	05 38	06 26	07 19	08 18	
	13	18	10.2		57.5	145	24.6	11.1	19	05.7	2.8	55.2	54	20 01	20 49	22 05	05 29	06 16	07 10	08 09	
	14	33	10.0		57.9	159	54.7	11.1	19	02.9	2.9	55.2	56	20 12	21 07	22 44	05 19	06 06	07 00	08 00	
	15	48	09.8		58.4	174	24.8	11.1	19	00.0	3.0	55.1	58	20 26	21 28	///	05 07	05 54	06 48	07 49	
	16	63	09.6		58.9	188	54.9	11.2	18	57.0	3.1	55.1	S60	20 42	21 56	///	04 54	05 39	06 34	07 37	
TUE	17	78	09.4		59.3	203	25.1	11.3	18	53.9	3.2	55.1	Day	SUN	Eqn. of Time	Mer. Pass.	MOON				
	18	93	09.2	S20	59.8	217	55.4	11.3	N18	50.7	3.2	55.1			12h	Upper	Pass. Lower	Age	Phase		
	19	108	09.0		60.3	232	25.7	11.3	18	47.5	3.4	55.1	24	m	s	h	m	h	m	d	
	20	123	08.8		60.7	246	56.0	11.4	18	44.1	3.4	55.0	25	13 27	13 18	11 47	01 15	13 41	16	☉	
	21	138	08.6		61.2	261	26.4	11.4													

G.M.T.		ARIES		VENUS -3.4		MARS +1.6		JUPITER -1.7		SATURN +0.8		STARS		
		G.H.A.		G.H.A.	Dec.	G.H.A.	Dec.	G.H.A.	Dec.	G.H.A.	Dec.	Name	S.H.A.	Dec.
MONDAY	27 ^h 00 ^m	65 40.0	198 02.9	S 16 37.2	177 57.4	S 22 18.7	119 45.8	S 20 01.5	127 32.4	S 21 13.6	Acamar	315 47.6	S 40 27.6	
	01	80 42.5	213 02.2	38.1	192 57.9	19.0	134 47.8	01.4	142 34.6	13.5	Achernar	335 55.4	S 57 26.1	
	02	95 45.0	228 01.5	39.0	207 58.4	19.3	149 49.8	01.3	157 36.8	13.5	Acrux	173 53.3	S 62 52.9	
	03	110 47.4	243 00.9	40.0	222 59.0	19.6	164 51.8	01.2	172 39.1	13.4	Adhara	255 42.9	S 28 55.1	
	04	125 49.9	258 00.2	40.9	237 59.5	19.9	179 53.8	01.1	187 41.3	13.4	Aldebaran	291 33.9	N 16 26.0	
	05	140 52.4	272 59.5	41.8	253 00.0	20.2	194 55.8	01.0	202 43.5	13.4				
	06	155 54.8	287 58.8	S 16 42.7	268 00.5	S 22 20.5	209 57.8	S 20 00.9	217 45.8	S 21 13.3	Alioth	166 55.3	N 56 09.9	
	07	170 57.3	302 58.2	43.6	283 01.0	20.8	224 59.9	00.8	232 48.0	13.3	Alkaid	153 30.1	N 49 30.2	
	08	185 59.7	317 57.5	44.5	298 01.6	21.1	240 01.9	00.7	247 50.2	13.2	Al Na'ir	28 32.8	S 47 09.0	
	09	201 02.2	332 56.8	45.4	313 02.1	21.3	255 03.9	00.6	262 52.4	13.2	Alnilam	276 25.7	S 1 13.6	
	10	216 04.7	347 56.2	46.3	328 02.6	21.6	270 05.9	00.5	277 54.7	13.2	Alphard	218 34.3	S 8 29.5	
	11	231 07.1	2 55.5	47.2	343 03.1	21.9	285 07.9	00.4	292 56.9	13.1				
	12	246 09.6	17 54.8	S 16 48.1	358 03.6	S 22 22.2	300 09.9	S 20 00.3	307 59.1	S 21 13.1	Alphecca	126 44.5	N 26 50.7	
	13	261 12.1	32 54.1	49.0	13 04.2	22.5	315 11.9	00.2	323 01.4	13.0	Alpheratz	358 23.8	N 28 52.9	
	14	276 14.5	47 53.5	49.9	28 04.7	22.8	330 13.9	00.1	338 03.6	13.0	Altair	62 46.5	N 8 46.2	
	15	291 17.0	62 52.8	50.8	43 05.2	23.1	345 16.0	00.0	353 05.8	13.0	Ankaa	353 54.0	S 42 31.0	
	16	306 19.5	77 52.1	51.7	58 05.7	23.4	0 18.0	19 59.9	8 08.1	12.9	Antares	113 14.6	S 26 20.7	
	17	321 21.9	92 51.4	52.6	73 06.2	23.7	15 20.0	59.8	23 10.3	12.9				
	18	336 24.4	107 50.7	S 16 53.5	88 06.7	S 22 24.0	30 22.0	S 19 59.7	38 12.5	S 21 12.8	Arcturus	146 31.7	N 19 22.9	
	19	351 26.9	122 50.1	54.4	103 07.3	24.3	45 24.0	59.6	53 14.8	12.8	Atria	108 52.0	S 68 57.5	
	20	6 29.3	137 49.4	55.3	118 07.8	24.6	60 26.0	59.5	68 17.0	12.8	Avior	234 33.6	S 59 23.0	
	21	21 31.8	152 48.7	56.2	133 08.3	24.9	75 28.0	59.4	83 19.2	12.7	Bellatrix	279 13.6	N 6 18.9	
	22	36 34.2	167 48.0	57.1	148 08.8	25.2	90 30.0	59.3	98 21.4	12.7	Betelgeuse	271 43.2	N 7 24.0	
	23	51 36.7	182 47.4	58.0	163 09.3	25.4	105 32.0	59.2	113 23.7	12.6				
TUESDAY	28 ^h 00 ^m	66 39.2	197 46.7	S 16 58.9	178 09.8	S 22 25.7	120 34.1	S 19 59.1	128 25.9	S 21 12.6	Canopus	264 13.0	S 52 40.4	
	01	81 41.6	212 46.0	16 59.8	193 10.4	26.0	135 36.1	59.0	143 28.1	12.6	Capella	281 31.7	N 45 57.5	
	02	96 44.1	227 45.3	17 00.7	208 10.9	26.3	150 38.1	58.9	158 30.4	12.5	Deneb	49 58.3	N 45 08.9	
	03	111 46.6	242 44.6	01.6	223 11.4	26.6	165 40.1	58.8	173 32.6	12.5	Denebola	183 13.6	N 14 47.1	
	04	126 49.0	257 43.9	02.5	238 11.9	26.9	180 42.1	58.7	188 34.8	12.4	Diphda	349 34.9	S 18 11.9	
	05	141 51.5	272 43.3	03.4	253 12.4	27.2	195 44.1	58.6	203 37.0	12.4				
	06	156 54.0	287 42.6	S 17 04.3	268 12.9	S 22 27.5	210 46.1	S 19 58.5	218 39.3	S 21 12.4	Dubhe	194 39.7	N 61 57.2	
	07	171 56.4	302 41.9	05.2	283 13.5	27.7	225 48.1	58.3	233 41.5	12.3	Elmath	279 01.6	N 28 34.5	
	08	186 58.9	317 41.2	06.1	298 14.0	28.0	240 50.1	58.2	248 43.7	12.3	Eltanin	91 04.8	N 51 29.8	
	09	202 01.4	332 40.5	07.0	313 14.5	28.3	255 52.1	58.1	263 46.0	12.2	Enif	34 25.5	N 9 42.1	
	10	217 03.8	347 39.8	07.9	328 15.0	28.6	270 54.1	58.0	278 48.2	12.2	Fomalhaut	16 07.0	S 29 49.6	
	11	232 06.3	2 39.1	08.7	343 15.5	28.9	285 56.2	57.9	293 50.4	12.2				
	12	247 08.7	17 38.5	S 17 09.6	358 16.0	S 22 29.2	300 58.2	S 19 57.8	308 52.6	S 21 12.1	Gacrux	172 44.7	S 56 53.6	
	13	262 11.2	32 37.8	10.5	13 16.5	29.5	316 00.2	57.7	323 54.9	12.1	Gienah	176 32.6	S 17 19.6	
	14	277 13.7	47 37.1	11.4	28 17.1	29.7	331 02.2	57.6	338 57.1	12.0	Hadar	149 43.9	S 60 11.1	
	15	292 16.1	62 36.4	12.3	43 17.6	30.0	346 04.2	57.5	353 59.3	12.0	Hamal	328 44.5	N 23 17.0	
	16	307 18.6	77 35.7	13.2	58 18.1	30.3	1 06.2	57.4	9 01.6	12.0	Kaus Aust.	84 36.0	S 34 24.2	
	17	322 21.1	92 35.0	14.0	73 18.6	30.6	16 08.2	57.3	24 03.8	11.9				
	18	337 23.5	107 34.3	S 17 14.9	88 19.1	S 22 30.9	31 10.2	S 19 57.2	39 06.0	S 21 11.9	Kochab	137 19.5	N 74 18.7	
	19	352 26.0	122 33.6	15.8	103 19.6	31.2	46 12.2	57.1	54 08.2	11.8	Markab	14 17.2	N 15 00.1	
	20	7 28.5	137 32.9	16.7	118 20.1	31.4	61 14.2	57.0	69 10.5	11.8	Menkar	314 55.6	N 3 56.4	
	21	22 30.9	152 32.2	17.6	133 20.6	31.7	76 16.2	56.9	84 12.7	11.8	Menkent	148 54.0	S 36 10.7	
	22	37 33.4	167 31.6	18.5	148 21.1	32.0	91 18.2	56.8	99 14.9	11.7	Miaplacidus	221 47.6	S 69 33.3	
	23	52 35.8	182 30.9	19.3	163 21.7	32.3	106 20.2	56.7	114 17.1	11.7				
WEDNESDAY	29 ^h 00 ^m	67 38.3	197 30.2	S 17 20.2	178 22.2	S 22 32.6	121 22.2	S 19 56.6	129 19.4	S 21 11.6	Mirfak	309 35.8	N 49 43.6	
	01	82 40.8	212 29.5	21.1	193 22.7	32.8	136 24.2	56.5	144 21.6	11.6	Nunki	76 47.0	S 26 20.7	
	02	97 43.2	227 28.8	22.0	208 23.2	33.1	151 26.3	56.4	159 23.8	11.6	Peacock	54 21.0	S 56 51.7	
	03	112 45.7	242 28.1	22.8	223 23.7	33.4	166 28.3	56.3	174 26.1	11.5	Pollux	244 15.2	N 28 07.0	
	04	127 48.2	257 27.4	23.7	238 24.2	33.7	181 30.3	56.2	189 28.3	11.5	Procyon	245 40.4	N 5 19.4	
	05	142 50.6	272 26.7	24.6	253 24.7	34.0	196 32.3	56.1	204 30.5	11.4				
	06	157 53.1	287 26.0	S 17 25.5	268 25.2	S 22 34.2	211 34.3	S 19 56.0	219 32.7	S 21 11.4	Rasalhague	96 43.0	N 12 35.4	
	07	172 55.6	302 25.3	26.3	283 25.7	34.5	226 36.3	55.8	234 35.0	11.4	Regulus	208 25.0	N 12 09.2	
	08	187 58.0	317 24.6	27.2	298 26.3	34.8	241 38.3	55.7	249 37.2	11.3	Rigel	281 49.3	S 8 14.7	
	09	203 00.5	332 23.9	28.1	313 26.8	35.1	256 40.3	55.6	264 39.4	11.3	Rigel Kent.	140 45.7	S 60 40.4	
	10	218 03.0	347 23.2	28.9	328 27.3	35.3	271 42.3	55.5	279 41.6	11.2	Sabik	102 57.7	S 15 40.6	
	11	233 05.4	2 22.5	29.8	343 27.8	35.6	286 44.3	55.4	294 43.9	11.2				
	12	248 07.9	17 21.8	S 17 30.7	358 28.3	S 22 35.9	301 46.3	S 19 55.3	309 46.1	S 21 11.2	Schedar	350 24.7	N 56 19.9	
	13	263 10.3	32 21.1	31.5	13 28.8	36.2	316 48.3	55.2	324 48.3	11.1	Shaula	97 15.4	S 37 04.5	
	14	278 12.8	47 20.4	32.4	28 29.3	36.5	331 50.3	55.1	339 50.5	11.1	Sirius	259 07.9	S 16 39.8	
	15	293 15.3	62 19.7	33.3	43 29.8	36.7	346 52.3	55.0	354 52.8	11.0	Spica	159 12.7	S 10 57.6	
	16	308 17.7	77 19.0	34.1	58 30.3	37.0	1 54.3	54.9	9 55.0	11.0	Suhail	223 21.0	S 43 16.5	
	17	323 20.2	92 18.3	35.0	73 30.8	37.3	16 56.3	54.8	24 57.2	11.0				
	18	338 22.7	107 17.6	S 17 35.9	88 31.3	S 22 37.6	31 58.3	S 19 54.7	39 59.4	S 21 10.9	Vega	81 05.8	N 38 45.1	
	19	353 25.1	122 16.9	36.7	103 31.8	37.8	47 00.3	54.6	55 01.7	10.9	Zuben'ubi	137 49.0	S 15 52.8	
	20	8 27.6	137 16.2	37.6	118 32.3	38.1	62 02.3	54.5	70 03.9	10.8				
	21	23 30.1	152 15.5	38.4	133 32.9	38.4	77 04.3	54.4	85 06.1	10.8				
	22	38 32.5	167 14.8	39.3	148 33.4	38.6	92 06.3	54.3	100 08.3	10.7				
	23	53 35.0	182 14.1	40.2	163 33.9	38.9	107 08.3	54.2	115 10.5	10.7				
Mer. Pass. 19 30.2		v -0.7 d 0.9		v 0.5 d 0.3		v 2.0 d 0.1		v 2.2 d 0.0						

G.M.T.		SUN		MOON				Lat.	Twilight		Sun-rise	Moonrise							
		G.H.A.	Dec.	G.H.A.	φ	Dec.	d		H.P.	Naut.		Civil	27	28	29	30			
d	h	$^{\circ}$	$'$	$^{\circ}$	$'$	$^{\circ}$	$'$	$^{\circ}$	h	m	h	m	h	m	h	m	h	m	
MONDAY	27 00	183	08.0	S21	02.6	304	57.9	11.6	N18	29.9	3.8	55.0			17 29	19 32	21 19	22 59	
	01	198	07.8	03.1		319	28.5	11.6	18	26.1	3.9	54.9			18 26	20 04	21 38	23 11	
	02	213	07.6	03.5		333	59.1	11.7	18	22.2	3.9	54.9			19 01	20 27	21 54	23 20	
	03	228	07.4	04.0		348	29.8	11.7	18	18.3	4.1	54.9			19 25	20 45	22 06	23 27	
	04	243	07.2	04.5		3 00.5	11.8	18	14.2	4.1	54.9				19 44	20 59	22 16	23 33	
	05	258	07.0	04.9		17 31.3	11.8	18	10.1	4.2	54.9				20 00	21 11	22 25	23 39	
	06	273	06.7	S21	05.4	32 02.1	11.9	N18	05.9	4.3	54.9				20 12	21 21	22 32	23 44	
	07	288	06.5	05.8		46 33.0	11.9	18	01.6	4.4	54.8				20 23	21 30	22 39	23 48	
	08	303	06.3	06.3		61 03.9	12.0	17	57.2	4.4	54.8				20 33	21 38	22 44	23 52	
	09	318	06.1	06.8		75 34.9	12.0	17	52.8	4.5	54.8				20 42	21 45	22 50	23 55	
	10	333	05.9	07.2		90 05.9	12.1	17	48.3	4.6	54.8				20 49	21 51	22 54	23 58	
	11	348	05.7	07.7		104 37.0	12.1	17	43.7	4.7	54.8				20 56	21 57	22 58	24 01	
	12	3 05.5	S21	08.1		119 08.1	12.2	N17	39.0	4.8	54.7				21 11	22 09	23 07	24 07	
	13	18	05.3	08.6		133 39.3	12.2	17	34.2	4.9	54.7				21 23	22 19	23 15	24 11	
	14	33	05.1	09.0		148 10.5	12.3	17	29.3	4.9	54.7				21 33	22 27	23 21	24 16	
	15	48	04.9	09.5		162 41.8	12.3	17	24.4	5.0	54.7				21 42	22 35	23 27	24 19	
	16	63	04.7	09.9		177 13.1	12.4	17	19.4	5.1	54.7				21 58	22 48	23 37	24 26	
	17	78	04.5	10.4		191 44.5	12.4	17	14.3	5.1	54.7				22 11	22 59	23 46	24 31	
	18	93	04.3	S21	10.8	206 15.9	12.4	N17	09.2	5.2	54.7				22 24	23 10	23 54	24 37	
	19	108	04.1	11.3		220 47.3	12.5	17	04.0	5.3	54.6				22 36	23 20	24 02	00 02	
	20	123	03.9	11.8		235 18.8	12.6	16	58.7	5.4	54.6				22 50	23 31	24 10	00 10	
	21	138	03.7	12.2		249 50.4	12.6	16	53.3	5.5	54.6				23 05	23 44	24 20	00 20	
	22	153	03.5	12.7		264 22.0	12.7	16	47.8	5.5	54.6				23 14	23 51	24 25	00 25	
	23	168	03.3	13.1		278 53.7	12.7	16	42.3	5.6	54.6				23 24	24 00	00 00	00 32	
	TUESDAY	28 00	183	03.1	S21	13.5	293 25.4	12.7	N16	36.7	5.7	54.6				23 36	24 09	00 09	00 39
01		198	02.8	14.0		307 57.1	12.8	16	31.0	5.7	54.6				23 50	24 26	00 26	00 52	
02		213	02.6	14.4		322 28.9	12.9	16	25.3	5.8	54.5				23 57	24 26	00 26	00 52	
03		228	02.4	14.9		337 00.8	12.8	16	19.5	5.9	54.5				24 04	00 04	00 32	00 57	
04		243	02.2	15.3		351 32.6	13.0	16	13.6	6.0	54.5				24 12	00 12	00 39	01 01	
05		258	02.0	15.8		6 04.6	13.0	16	07.6	6.0	54.5				24 21	00 21	00 46	01 07	
06		273	01.8	S21	16.2	20 36.6	13.0	N16	01.6	6.1	54.5				00 03	00 32	00 55	01 13	
07		288	01.6	16.7		35 08.6	13.1	15	55.5	6.1	54.5								
08		303	01.4	17.1		49 40.7	13.1	15	49.4	6.2	54.5								
09		318	01.2	17.5		64 12.8	13.2	15	43.2	6.3	54.5								
10		333	01.0	18.0		78 45.0	13.2	15	36.9	6.4	54.4								
11		348	00.7	18.4		93 17.2	13.2	15	30.5	6.4	54.4								
12		3 00.5	S21	18.9		107 49.4	13.3	N15	24.1	6.5	54.4								
13		18	00.3	19.3		122 21.7	13.4	15	17.6	6.6	54.4								
14		33	00.1	19.7		136 54.1	13.4	15	11.0	6.6	54.4								
15		47	59.9	20.2		151 26.5	13.4	15	04.4	6.6	54.4								
16		62	59.7	20.6		165 58.9	13.5	14	57.8	6.8	54.4								
17		77	59.5	21.1		180 31.4	13.5	14	51.0	6.8	54.4								
18		92	59.2	S21	21.5	195 03.9	13.5	N14	44.2	6.9	54.4								
19		107	59.0	21.9		209 36.4	13.6	14	37.3	6.9	54.4								
20		122	58.8	22.4		224 09.0	13.7	14	30.4	7.0	54.3								
21		137	58.6	22.8		238 41.7	13.7	14	23.4	7.0	54.3								
22		152	58.4	23.2		253 14.4	13.7	14	16.4	7.1	54.3								
23		167	58.2	23.7		267 47.1	13.7	14	09.3	7.2	54.3								
WEDNESDAY		29 00	182	57.9	S21	24.1	282 19.8	13.9	N14	02.1	7.2	54.3							
	01	197	57.7	24.5		296 52.7	13.8	13	54.9	7.3	54.3								
	02	212	57.5	24.9		311 25.5	13.9	13	47.6	7.3	54.3								
	03	227	57.3	25.4		325 58.4	13.9	13	40.3	7.4	54.3								
	04	242	57.1	25.8		340 31.3	14.0	13	32.9	7.5	54.3								
	05	257	56.9	26.2		355 04.3	13.9	13	25.4	7.5	54.3								
	06	272	56.6	S21	26.7	9 37.2	14.1	N13	17.9	7.5	54.3								
	07	287	56.4	27.1		24 10.3	14.0	13	10.4	7.6	54.3								
	08	302	56.2	27.5		38 43.3	14.2	13	02.8	7.7	54.3								
	09	317	56.0	27.9		53 16.5	14.1	12	55.1	7.7	54.3								
	10	332	55.8	28.4		67 49.6	14.2	12	47.4	7.8	54.3								
	11	347	55.6	28.8		82 22.8	14.2	12	39.6	7.8	54.3								
	12	2 55.3	S21	29.2		96 56.0	14.2	N12	31.8	7.9	54.3								
	13	17	55.1	29.6		111 29.2	14.3	12	23.9	7.9	54.3								
	14	32	54.9	30.1		126 02.5	14.3	12	16.0	8.0	54.3								
	15	47	54.7	30.5		140 35.8	14.3	12	08.0	8.0	54.3								
	16	62	54.5	30.9		155 09.1	14.4	12	00.0	8.1	54.2								
	17	77	54.2	31.3		169 42.5	14.4	11	51.9	8.1	54.2								
	18	92	54.0	S21	31.7	184 15.9	14.5	N11	43.8	8.2	54.2								
	19	107	53.8	32.1		198 49.4	14.4	11	35.6	8.2	54.2								
	20	122	53.6	32.6		213 22.8	14.5	11	27.4	8.3	54.2								
	21	137	53.3	33.0		227 56.3	14.5	11	19.1	8.3	54.2								
	22	152	53.1	33.4		242 29.8	14.6	11	10.8	8.3	54.2								
	23	167	52.9	33.8		257 03.4	14.6	11	02.5	8.5	54.2								
		S.D. 16.2 d 0.4		S.D. 14.9		14.8		14.8											
</																			

G.M.T.		ARIES		VENUS -3.4		MARS +1.6		JUPITER -1.7		SATURN +0.8		STARS			
		G.H.A.	G.H.A.	Dec.	G.H.A.	Dec.	G.H.A.	Dec.	G.H.A.	Dec.	G.H.A.	Dec.	Name	S.H.A.	Dec.
T H U R S D A Y	^d ^h 3000	68 37.5	197 13.4	S 17 41.0	178 34.4	S 22 39.2	122 10.3	S 19 54.0	130 12.8	S 21 10.7			Acamar	315 47.6	S 40 27.6
	01	83 39.9	212 12.6	41.9	193 34.9	39.5	137 12.3	53.9	145 15.0	10.6			Achernar	335 55.4	S 57 26.1
	02	98 42.4	227 11.9	42.7	208 35.4	39.7	152 14.3	53.8	160 17.2	10.6			Acrux	173 53.2	S 62 52.9
	03	113 44.8	242 11.2	43.6	223 35.9	40.0	167 16.3	53.7	175 19.4	10.5			Adhara	255 42.9	S 28 55.1
	04	128 47.3	257 10.5	44.5	238 36.4	40.3	182 18.3	53.6	190 21.7	10.5			Aldebaran	291 33.9	N 16 25.9
	05	143 49.8	272 9.8	45.3	253 36.9	40.5	197 20.3	53.5	205 23.9	10.5					
	06	158 52.2	287 09.1	S 17 46.2	268 37.4	S 22 40.8	212 22.3	S 19 53.4	220 26.1	S 21 10.4			Alioth	166 55.3	N 56 09.9
	07	173 54.7	302 08.4	47.0	283 37.9	41.1	227 24.3	53.3	235 28.3	10.4			Alkaid	153 30.0	N 49 30.2
	08	188 57.2	317 07.7	47.9	298 38.4	41.3	242 26.3	53.2	250 30.6	10.3			Al Na'ir	28 32.8	S 47 09.0
	09	203 59.6	332 07.0	48.7	313 38.9	41.6	257 28.3	53.1	265 32.8	10.3			Alnilam	276 25.7	S 1 13.6
	10	219 02.1	347 06.3	49.6	328 39.4	41.9	272 30.3	53.0	280 35.0	10.3			Alphard	218 34.3	S 8 29.5
	11	234 04.6	2 05.5	50.4	343 39.9	42.2	287 32.3	52.9	295 37.2	10.2					
	12	249 07.0	17 04.8	S 17 51.3	358 40.4	S 22 42.4	302 34.3	S 19 52.8	310 39.4	S 21 10.2			Alphecca	126 44.5	N 26 50.7
	13	264 09.5	32 04.1	52.1	13 40.9	42.7	317 36.3	52.7	325 41.7	10.1			Alpheratz	358 23.8	N 28 52.9
	14	279 11.9	47 03.4	53.0	28 41.4	43.0	332 38.3	52.6	340 43.9	10.1			Altair	62 46.5	N 8 46.1
	15	294 14.4	62 02.7	53.8	43 41.9	43.2	347 40.3	52.5	355 46.1	10.0			Ankaa	353 54.0	S 42 31.0
	16	309 16.9	77 02.0	54.6	58 42.4	43.5	2 42.3	52.3	10 48.3	10.0			Antares	113 14.5	S 26 20.7
	17	324 19.3	92 01.3	55.5	73 42.9	43.7	17 44.3	52.2	25 50.6	10.0					
	18	339 21.8	107 00.5	S 17 56.3	88 43.4	S 22 44.0	32 46.3	S 19 52.1	40 52.8	S 21 09.9			Arcturus	146 31.6	N 19 22.9
	19	354 24.3	121 59.8	57.2	103 43.9	44.3	47 48.3	52.0	55 55.0	09.9			Atria	108 52.0	S 68 57.5
	20	9 26.7	136 59.1	58.0	118 44.4	44.5	62 50.3	51.9	70 57.2	09.8			Avior	234 33.6	S 59 23.0
	21	24 29.2	151 58.4	58.9	133 44.9	44.8	77 52.3	51.8	85 59.4	09.8			Bellatrix	279 13.6	N 6 18.9
	22	39 31.7	166 57.7	17 59.7	148 45.4	45.1	92 54.3	51.7	101 01.7	09.8			Betelgeuse	271 43.2	N 7 24.0
	23	54 34.1	181 57.0	18 00.5	163 45.9	45.3	107 56.3	51.6	116 03.9	09.7					
F R I D A Y	00	69 36.6	196 56.2	S 18 01.4	178 46.4	S 22 45.6	122 58.3	S 19 51.5	131 06.1	S 21 09.7			Canopus	264 13.0	S 52 40.4
	01	84 39.1	211 55.5	02.2	193 46.9	45.9	138 00.3	51.4	146 08.3	09.6			Capella	281 31.7	N 45 57.5
	02	99 41.5	226 54.8	03.1	208 47.4	46.1	153 02.3	51.3	161 10.6	09.6			Deneb	49 58.3	N 45 08.9
	03	114 44.0	241 54.1	03.9	223 47.9	46.4	168 04.3	51.2	176 12.8	09.6			Denebola	183 13.6	N 14 47.1
	04	129 46.4	256 53.4	04.7	238 48.4	46.6	183 06.3	51.1	191 15.0	09.5			Diphda	349 34.9	S 18 11.9
	05	144 48.9	271 52.6	05.6	253 48.9	46.9	198 08.3	51.0	206 17.2	09.5					
	06	159 51.4	286 51.9	S 18 06.4	268 49.4	S 22 47.2	213 10.3	S 19 50.8	221 19.4	S 21 09.4			Dubhe	194 39.6	N 61 57.2
	07	174 53.8	301 51.2	07.2	283 49.9	47.4	228 12.3	50.7	236 21.7	09.4			Elinak	279 01.6	N 28 34.5
	08	189 56.3	316 50.5	08.1	298 50.4	47.7	243 14.3	50.6	251 23.9	09.3			Eltanin	91 04.8	N 51 29.8
	09	204 58.8	331 49.7	08.9	313 50.9	47.9	258 16.2	50.5	266 26.1	09.3			Enif	34 25.5	N 9 42.1
	10	220 01.2	346 49.0	09.7	328 51.4	48.2	273 18.2	50.4	281 28.3	09.3			Fomalhaut	16 07.0	S 29 49.6
	11	235 03.7	1 48.3	10.5	343 51.9	48.5	288 20.2	50.3	296 30.5	09.2					
	12	250 06.2	16 47.6	S 18 11.4	358 52.4	S 22 48.7	303 22.2	S 19 50.2	311 32.8	S 21 09.2			Gacrux	172 44.7	S 56 53.6
	13	265 08.6	31 46.8	12.2	13 52.9	49.0	318 24.2	50.1	326 35.0	09.1			Gienah	176 32.6	S 17 19.6
	14	280 11.1	46 46.1	13.0	28 53.4	49.2	333 26.2	50.0	341 37.2	09.1			Hadar	149 43.8	S 60 11.1
	15	295 13.5	61 45.4	13.8	43 53.9	49.5	348 28.2	49.9	356 39.4	09.1			Hamal	328 44.5	N 23 17.0
	16	310 16.0	76 44.7	14.7	58 54.4	49.7	3 30.2	49.8	11 41.6	09.0			Kaus Aust.	84 36.0	S 34 24.2
	17	325 18.5	91 43.9	15.5	73 54.9	50.0	18 32.2	49.7	26 43.9	09.0					
	18	340 20.9	106 43.2	S 18 16.3	88 55.4	S 22 50.2	33 34.2	S 19 49.5	41 46.1	S 21 08.9			Kochab	137 19.5	N 74 18.7
	19	355 23.4	121 42.5	17.1	103 55.9	50.5	48 36.2	49.4	56 48.3	08.9			Markab	14 17.2	N 15 00.1
	20	10 25.9	136 41.7	18.0	118 56.4	50.8	63 38.2	49.3	71 50.5	08.8			Menkar	314 55.6	N 3 56.4
	21	25 28.3	151 41.0	18.8	133 56.9	51.0	78 40.2	49.2	86 52.7	08.8			Menkent	148 54.0	S 36 10.7
	22	40 30.8	166 40.3	19.6	148 57.4	51.3	93 42.2	49.1	101 55.0	08.8			Miaplacidus	221 47.6	S 69 33.3
	23	55 33.3	181 39.6	20.4	163 57.9	51.5	108 44.2	49.0	116 57.2	08.7					
S A T U R D A Y	2 00	70 35.7	196 38.8	S 18 21.2	178 58.4	S 22 51.8	123 46.1	S 19 48.9	131 59.4	S 21 08.7			Mirfak	309 35.8	N 49 43.6
	01	85 38.2	211 38.1	22.0	193 58.9	52.0	138 48.1	48.8	147 01.6	08.6			Nunki	76 47.0	S 26 20.7
	02	100 40.7	226 37.4	22.9	208 59.3	52.3	153 50.1	48.7	162 03.8	08.6			Peacock	54 21.1	S 56 51.7
	03	115 43.1	241 36.6	23.7	223 59.8	52.5	168 52.1	48.6	177 06.0	08.5			Pollux	244 15.2	N 28 07.0
	04	130 45.6	256 35.9	24.5	239 00.3	52.8	183 54.1	48.5	192 08.3	08.5			Procyon	245 40.3	N 5 19.4
	05	145 48.0	271 35.2	25.3	254 00.8	53.0	198 56.1	48.3	207 10.5	08.5					
	06	160 50.5	286 34.4	S 18 26.1	269 01.3	S 22 53.3	213 58.1	S 19 48.2	222 12.7	S 21 08.4			Rasalhague	96 43.0	N 12 35.4
	07	175 53.0	301 33.7	26.9	284 01.8	53.5	229 00.1	48.1	237 14.9	08.4			Regulus	208 25.0	N 12 09.2
	08	190 55.4	316 32.9	27.7	299 02.3	53.8	244 02.1	48.0	252 17.1	08.3			Rigel	281 49.2	S 8 14.7
	09	205 57.9	331 32.2	28.5	314 02.8	54.0	259 04.1	47.9	267 19.4	08.3			Rigel Kent.	140 45.6	S 60 40.4
	10	221 00.4	346 31.5	29.4	329 03.3	54.3	274 06.1	47.8	282 21.6	08.3			Sabik	102 57.7	S 15 40.6
	11	236 02.8	1 30.7	30.2	344 03.8	54.5	289 08.1	47.7	297 23.8	08.2					
	12	251 05.3	16 30.0	S 18 31.0	359 04.3	S 22 54.8	304 10.0	S 19 47.6	312 26.0	S 21 08.2			Schedar	350 24.7	N 56 19.9
	13	266 07.8	31 29.3	31.8	14 04.8	55.0	319 12.0	47.5	327 28.2	08.1			Shaula	97 15.4	S 37 04.5
	14	281 10.2	46 28.5	32.6	29 05.3	55.3	334 14.0	47.4	342 30.4	08.1			Sirius	259 07.9	S 16 39.8
	15	296 12.7	61 27.8	33.4	44 05.7	55.5	349 16.0	47.2	357 32.7	08.0			Spica	159 12.6	S 10 57.6
	16	311 15.2	76 27.0	34.2	59 06.2	55.8	4 18.0	47.1	12 34.9	08.0			Suhail	223 21.0	S 43 16.5
	17	326 17.6	91 26.3	35.0	74 06.7	56.0	19 20.0	47.0	27 37.1	08.0					
	18	341 20.1	106 25.6	S 18 35.8	89 07.2	S 22 56.3	34 22.0	S 19 46.9	42 39.3	S 21 07.9			Vega	81 05.8	N 38 45.1
	19	356 22.5	121 24.8	36.6	104 07.7	56.5	49 24.0	46.8	57 41.5	07.9			Zuben'ubi	137 49.0	S 15 52.8
	20	11 25.0	136 24.1	37.4	119 08.2	56.8	64 26.0	46.7	72 43.7	07.8					
	21	26 27.5	151 23.3	38.2	134 08.7	57.0	79 28.0	46.6	87 46.0	07.8					
	22	41 29.9	166 22.6	39.0	149 09.2	57.2	94 29.9	46.5	102 48.2	07.7			Venus	127 19.6	10 53
	23	56 32.4	181 21.9	39.8	164 09.7	57.5	109 31.9	46.4	117 50.4	07.7			Mars	109 09.8	12 04
Mer. Pass. 19 18.4		^h ^m <i>v</i> 0.7	<i>d</i> 0.8	<i>v</i> 0.5	<i>d</i> 0.3	<i>v</i> 2.0	<i>d</i> 0.1	<i>v</i> 2.2	<i>d</i> 0.0			Jupiter	53 21.7	15 46	
												Saturn	61 29.5	15 13	

	ARIES		VENUS -3.4		MARS +1.5		JUPITER -1.7		SATURN +0.8		STARS				
G.M.T.	G.H.A.	G.H.A.	Dec.	G.H.A.	Dec.	G.H.A.	Dec.	G.H.A.	Dec.	G.H.A.	Dec.	Name	S.H.A.	Dec.	
SUNDAY	3 ^d 00	71 34.9	196 21.1	S 18 40.6	179 10.2	S 22 57.7	124 33.9	S 19 46.3	132 52.6	S 21 07.7		Acamar	315 47.6	S 40 27.6	
	01	86 37.3	211 20.4	41.4	194 10.6	58.0	139 35.9	46.2	147 54.8	07.6		Achernar	335 55.4	S 57 26.1	
	02	101 39.8	226 19.6	42.2	209 11.1	58.2	154 37.9	46.0	162 57.0	07.6		Acrux	173 53.2	S 62 52.9	
	03	116 42.3	241 18.9	.. 43.0	224 11.6	.. 58.5	169 39.9	.. 45.9	177 59.3	.. 07.5		Adhara	255 42.9	S 28 55.1	
	04	131 44.7	256 18.1	43.8	239 12.1	58.7	184 41.9	45.8	193 01.5	07.5		Aldebaran	291 33.8	N 16 25.9	
	05	146 47.2	271 17.4	44.6	254 12.6	58.9	199 43.9	45.7	208 03.7	07.4					
	06	161 49.7	286 16.6	S 18 45.4	269 13.1	S 22 59.2	214 45.8	S 19 45.6	223 05.9	S 21 07.4		Alioth	166 55.3	N 56 09.9	
	07	176 52.1	301 15.9	46.1	284 13.6	59.4	229 47.8	45.5	238 08.1	07.4		Alkaid	153 30.0	N 49 30.1	
	08	191 54.6	316 15.1	46.9	299 14.1	59.7	244 49.8	45.4	253 10.3	07.3		Al Na'ir	28 32.8	S 47 09.9	
	09	206 57.0	331 14.4	.. 47.7	314 14.5	22 59.9	259 51.8	.. 45.3	268 12.6	.. 07.3		Alnilam	276 25.7	S 1 13.6	
MONDAY	10	221 59.5	346 13.6	48.5	329 15.0	23 00.1	274 53.8	45.2	283 14.8	07.2		Alphard	218 34.3	S 8 29.5	
	11	237 02.0	1 12.9	49.3	344 15.5	00.4	289 55.8	45.0	298 17.0	07.2					
	12	252 04.4	16 12.1	S 18 50.1	359 16.0	S 23 00.6	304 57.8	S 19 44.9	313 19.2	S 21 07.1		Alphecca	126 44.4	N 26 50.6	
	13	267 06.9	31 11.4	50.9	14 16.5	00.9	319 59.8	44.8	328 21.4	07.1		Alpheratz	358 23.8	N 28 52.9	
	14	282 09.4	46 10.6	51.7	29 17.0	01.1	335 01.7	44.7	343 23.6	07.1		Altair	62 46.5	N 8 46.1	
	15	297 11.8	61 09.9	.. 52.4	44 17.5	.. 01.3	350 03.7	.. 44.6	358 25.8	.. 07.0		Ankaa	353 54.0	S 42 31.0	
	16	312 14.3	76 09.1	53.2	59 17.9	01.6	5 05.7	44.5	13 28.1	07.0		Antares	113 14.5	S 26 20.7	
	17	327 16.8	91 08.4	54.0	74 18.4	01.8	20 07.7	44.4	28 30.3	06.9					
	18	342 19.2	106 07.6	S 18 54.8	89 18.9	S 23 02.1	35 09.7	S 19 44.3	43 32.5	S 21 06.9		Arcturus	146 31.6	N 19 22.9	
	19	357 21.7	121 06.9	55.6	104 19.4	02.3	50 11.7	44.1	58 34.7	06.8		Atria	108 52.0	S 68 57.4	
TUESDAY	20	12 24.1	136 06.1	56.3	119 19.9	02.5	65 13.7	44.0	73 36.9	06.8		Avior	234 33.5	S 59 23.0	
	21	27 26.6	151 05.4	.. 57.1	134 20.4	.. 02.8	80 15.6	.. 43.9	88 39.1	.. 06.8		Bellatrix	279 13.6	N 6 18.9	
	22	42 29.1	166 04.6	57.9	149 20.9	03.0	95 17.6	43.8	103 41.3	06.7		Betelgeuse	271 43.2	N 7 24.0	
	23	57 31.5	181 03.9	58.7	164 21.3	03.2	110 19.6	43.7	118 43.6	06.7					
	00	72 34.0	196 03.1	S 18 59.4	179 21.8	S 23 03.5	125 21.6	S 19 43.6	133 45.8	S 21 06.6		Canopus	264 13.0	S 52 40.4	
	01	87 36.5	211 02.3	19 00.2	194 22.3	03.7	140 23.6	43.5	148 48.0	06.6		Capella	281 31.7	N 45 57.5	
	02	102 38.9	226 01.6	01.0	209 22.8	03.9	155 25.6	43.4	163 50.2	06.5		Deneb	49 58.3	N 45 08.9	
	03	117 41.4	241 00.8	.. 01.8	224 23.3	.. 04.2	170 27.5	.. 43.3	178 52.4	.. 06.5		Denebola	183 13.5	N 14 47.1	
	04	132 43.9	256 00.1	02.5	239 23.8	04.4	185 29.5	43.1	193 54.6	06.5		Diphda	349 34.9	S 18 11.9	
	05	147 46.3	270 59.3	03.3	254 24.2	04.6	200 31.5	43.0	208 56.8	06.4					
WEDNESDAY	06	162 48.8	285 58.5	S 19 04.1	269 24.7	S 23 04.9	215 33.5	S 19 42.9	223 59.0	S 21 06.4		Dubhe	194 39.6	N 61 57.2	
	07	177 51.3	300 57.8	04.8	284 25.2	05.1	230 35.5	42.8	239 01.3	06.3		Elmath	279 01.6	N 28 34.5	
	08	192 53.7	315 57.0	05.6	299 25.7	05.3	245 37.5	42.7	254 03.5	06.3		Eltanin	91 04.8	N 51 29.8	
	09	207 56.2	330 56.3	.. 06.4	314 26.2	.. 05.6	260 39.4	.. 42.6	269 05.7	.. 06.2		Enif	34 25.5	N 9 42.1	
	10	222 58.6	345 55.5	07.1	329 26.7	05.8	275 41.4	42.5	284 07.9	06.2		Fomalhaut	16 07.0	S 29 49.6	
	11	238 01.1	0 54.7	07.9	344 27.1	06.0	290 43.4	42.4	299 10.1	06.1					
	12	253 03.6	15 54.0	S 19 08.7	359 27.6	S 23 06.2	305 45.4	S 19 42.2	314 12.3	S 21 06.1		Gacrux	172 44.6	S 56 53.6	
	13	268 06.0	30 53.2	09.4	14 28.1	06.5	320 47.4	42.1	329 14.5	06.1		Gienah	176 32.6	S 17 19.6	
	14	283 08.5	45 52.4	10.2	29 28.6	06.7	335 49.4	42.0	344 16.7	06.0		Hadar	149 43.8	S 60 11.0	
	15	298 11.0	60 51.7	.. 11.0	44 29.1	.. 06.9	350 51.3	.. 41.9	359 19.0	.. 06.0		Hamal	328 44.5	N 23 17.0	
THURSDAY	16	313 13.4	75 50.9	11.7	59 29.5	07.2	5 53.3	41.8	14 21.2	05.9		Kaus Aust.	84 36.0	S 34 24.2	
	17	328 15.9	90 50.2	12.5	74 30.0	07.4	20 55.3	41.7	29 23.4	05.9					
	18	343 18.4	105 49.4	S 19 13.2	89 30.5	S 23 07.6	35 57.3	S 19 41.6	44 25.6	S 21 05.8		Kochab	137 19.5	N 74 18.7	
	19	358 20.8	120 48.6	14.0	104 31.0	07.8	50 59.3	41.4	59 27.8	05.8		Markab	14 17.2	N 15 00.1	
	20	13 23.3	135 47.9	14.7	119 31.5	08.1	66 01.2	41.3	74 30.0	05.8		Menkar	314 55.6	N 3 56.4	
	21	28 25.7	150 47.1	.. 15.5	134 31.9	.. 08.3	81 03.2	.. 41.2	89 32.2	.. 05.7		Menkent	148 53.9	S 36 10.7	
	22	43 28.2	165 46.3	16.3	149 32.4	08.5	96 05.2	41.1	104 34.4	05.7		Miaplacidus	221 47.5	S 69 33.3	
	23	58 30.7	180 45.5	17.0	164 32.9	08.7	111 07.2	41.0	119 36.6	05.6					
	00	73 33.1	195 44.8	S 19 17.8	179 33.4	S 23 09.0	126 09.2	S 19 40.9	134 38.9	S 21 05.6		Mirfak	309 35.8	N 49 43.6	
	01	88 35.6	210 44.0	18.5	194 33.9	09.2	141 11.2	40.8	149 41.1	05.5		Nunki	76 47.0	S 26 20.7	
02	103 38.1	225 43.2	19.3	209 34.3	09.4	156 13.1	40.7	164 43.3	05.5		Peacock	54 21.1	S 56 51.7		
03	118 40.5	240 42.5	.. 20.0	224 34.8	.. 09.6	171 15.1	.. 40.5	179 45.5	.. 05.4		Pollux	244 15.2	N 28 07.0		
04	133 43.0	255 41.7	20.8	239 35.3	09.9	186 17.1	40.4	194 47.7	05.4		Procyon	245 40.3	N 5 19.4		
05	148 45.5	270 40.9	21.5	254 35.8	10.1	201 19.1	40.3	209 49.9	05.4						
FRIDAY	06	163 47.9	285 40.2	S 19 22.3	269 36.2	S 23 10.3	216 21.0	S 19 40.2	224 52.1	S 21 05.3		Rasalhague	96 43.0	N 12 35.4	
	07	178 50.4	300 39.4	23.0	284 36.7	10.5	231 23.0	40.1	239 54.3	05.3		Regulus	208 25.0	N 12 09.2	
	08	193 52.9	315 38.6	23.8	299 37.2	10.8	246 25.0	40.0	254 56.5	05.2		Rigel	281 49.2	S 8 14.7	
	09	208 55.3	330 37.8	.. 24.5	314 37.7	.. 11.0	261 27.0	.. 39.9	269 58.8	.. 05.2		Rigel Kent.	140 45.6	S 60 40.4	
	10	223 57.8	345 37.1	25.2	329 38.2	11.2	276 29.0	39.7	285 01.0	05.1		Sabik	102 57.7	S 15 40.6	
	11	239 00.2	0 36.3	26.0	344 38.6	11.4	291 30.9	39.6	300 03.2	05.1					
	12	254 02.7	15 35.5	S 19 26.7	359 39.1	S 23 11.6	306 32.9	S 19 39.5	315 05.4	S 21 05.0		Schedar	350 24.8	N 56 19.9	
	13	269 05.2	30 34.7	27.5	14 39.6	11.9	321 34.9	39.4	330 07.6	05.0		Shaula	97 15.4	S 37 04.5	
	14	284 07.6	45 34.0	28.2	29 40.1	12.1	336 36.9	39.3	345 09.8	05.0		Sirius	259 07.8	S 16 39.8	
	15	299 10.1	60 33.2	.. 28.9	44 40.5	.. 12.3	351 38.9	.. 39.2	0 12.0	.. 04.9		Spica	159 12.6	N 10 57.6	
SATURDAY	16	314 12.6	75 32.4	29.7	59 41.0	12.5	6 40.8	39.1	15 14.2	04.9		Suhail	223 20.9	S 43 16.5	
	17	329 15.0	90 31.6	30.4	74 41.5	12.7	21 42.8	38.9	30 16.4	04.8					
	18	344 17.5	105 30.8	S 19 31.2	89 42.0	S 23 12.9	36 44.8	S 19 38.8	45 18.6	S 21 04.8		Vega	81 05.8	N 38 45.1	
	19	359 20.0	120 30.1	31.9	104 42.4	13.2	51 46.8	38.7	60 20.9	04.7		Zuben'ubi	137 49.0	S 15 52.8	
	20	14 22.4	135 29.3	32.6	119 42.9	13.4	66 48.7	38.6	75 23.1	04.7					
	21	29 24.9	150 28.5	.. 33.4	134 43.4	.. 13.6	81 50.7	.. 38.5	90 25.3	.. 04.6					
	22	44 27.4	165 27.7	34.1	149 43.9	13.8	96 52.7	38.4	105 27.5	04.6					
	23	59 29.8	180 26.9	34.8	164 44.3	14.0	111 54.7	38.3	120 29.7	04.6					
	Mer. Pass. 19 06.6		v -0.8 d 0.8		v 0.5 d 0.2		v 2.0 d 0.1		v 2.2 d 0.0						
											S.H.A.		Mer. Pass.		
										Venus		123 29.1	10 56		
										Mars		106 47.8	12 02		
										Jupiter		52 47.6	15 36		
										Saturn		61 11.8	15 03		

G.M.T.		SUN			MOON			Lat.	Twilight		Sun-rise	Moonrise										
		G.H.A.	Dec.		G.H.A.	φ	Dec.		d	H.P.		Naut.	Civil	3	4	5	6					
d	h	$^{\circ}$	$'$	$''$	$^{\circ}$	$'$	$''$	$^{\circ}$	$'$	$''$	$^{\circ}$	$'$	$''$	$^{\circ}$	$'$	$''$	$^{\circ}$	$'$	$''$	$^{\circ}$	$'$	$''$
SUNDAY	3 00	182	35.8	S22 02.2	240	23.1	14.7 S	0 37.4	10.3	55.0	N 72	07 58	10 03	■	02 16	03 58	05 45	07 43				
	01	197	35.6	02.5	254	56.8	14.6	0 47.7	10.3	55.1	N 70	07 41	09 20	■	02 14	03 50	05 29	07 15				
	02	212	35.3	02.9	269	30.4	14.7	0 58.0	10.4	55.1	68	07 27	08 51	10 54	02 13	03 43	05 16	06 54				
	03	227	35.1	03.2	284	04.1	14.6	1 08.4	10.3	55.1	64	07 06	08 12	09 23	02 11	03 33	04 57	06 24				
	04	242	34.9	03.6	298	37.7	14.6	1 18.7	10.3	55.1	62	06 57	07 58	08 59	02 10	03 29	04 50	06 12				
	05	257	34.6	04.0	313	11.3	14.5	1 29.0	10.4	55.2	60	06 50	07 45	08 40	02 10	03 25	04 43	06 03				
	06	272	34.4	S22 04.3	327	44.8	14.6 S	1 39.4	10.3	55.2	N 58	06 43	07 35	08 25	02 09	03 22	04 37	05 55				
	07	287	34.1	04.7	342	18.4	14.5	1 49.7	10.4	55.2	56	06 37	07 25	08 11	02 09	03 20	04 32	05 47				
	08	302	33.9	05.0	356	51.9	14.4	2 00.1	10.3	55.2	54	06 32	07 17	08 00	02 08	03 17	04 28	05 43				
	09	317	33.6	05.4	11 25.3	14.5		2 10.4	10.4	55.2	52	06 26	07 10	07 49	02 08	03 15	04 24	05 39				
	10	332	33.4	05.7	25 58.8	14.4		2 20.8	10.3	55.3	50	06 22	07 02	07 40	02 07	03 13	04 20	05 29				
	11	347	33.1	06.1	40 32.2	14.3		2 31.1	10.4	55.3	45	06 11	06 48	07 21	02 07	03 09	04 12	05 18				
	12	2 32.9	S22 06.5	55 05.5	14.4 S	2 41.5	10.3	55.3	N 40	06 01	06 35	07 05	02 06	03 05	04 06	05 09						
	13	17 32.6	06.8	69 38.9	14.2	2 51.8	10.4	55.3	35	05 53	06 24	06 52	02 05	03 02	04 00	05 01						
	14	32 32.4	07.2	84 12.1	14.3	3 02.2	10.3	55.4	30	05 45	06 14	06 40	02 05	02 59	03 56	04 54						
	15	47 32.1	07.5	98 45.4	14.2	3 12.5	10.3	55.4	20	05 29	05 57	06 20	02 04	02 55	03 47	04 42						
	16	62 31.9	07.9	113 18.6	14.2	3 22.8	10.4	55.4	N 10	05 14	05 40	06 03	02 03	02 50	03 40	04 31						
	17	77 31.6	08.2	127 51.8	14.1	3 33.2	10.3	55.4	0	04 58	05 24	05 46	02 02	02 47	03 33	04 22						
	18	92 31.4	S22 08.6	142 24.9	14.1 S	3 43.5	10.3	55.5	S 10	04 40	05 07	05 30	02 02	02 43	03 26	04 12						
	19	107 31.1	08.9	156 58.0	14.1	3 53.8	10.3	55.5	20	04 19	04 48	05 12	02 01	02 39	03 19	04 01						
	20	122 30.9	09.3	171 31.1	14.0	4 04.1	10.3	55.5	30	03 51	04 24	04 51	02 00	02 34	03 10	03 50						
	21	137 30.6	09.6	186 04.1	14.0	4 14.4	10.3	55.5	35	03 34	04 10	04 39	02 00	02 32	03 06	03 43						
	22	152 30.4	09.9	200 37.1	13.9	4 24.7	10.3	55.6	40	03 12	03 53	04 25	01 59	02 29	03 00	03 35						
23	167 30.1	10.3	215 10.0	13.9	4 35.0	10.3	55.6	45	02 44	03 32	04 08	01 59	02 25	02 54	03 26							
MONDAY	4 00	182	29.9	S22 10.6	229 42.9	13.8 S	4 45.3	10.3	55.6	S 50	02 03	03 04	03 47	01 58	02 21	02 47	03 16					
	01	197	29.6	11.0	244 15.7	13.8	4 55.6	10.2	55.6	52	01 40	02 50	03 37	01 58	02 19	02 43	03 11					
	02	212	29.4	11.3	258 48.5	13.8	5 05.8	10.3	55.7	54	01 08	02 34	03 26	01 57	02 17	02 40	03 05					
	03	227 29.1	11.7	273 21.3	13.7	5 16.1	10.2	55.7	56	////	02 15	03 13	01 57	02 15	02 36	02 59						
	04	242 28.9	12.0	287 54.0	13.7	5 26.3	10.2	55.7	58	////	01 50	02 58	01 56	02 13	02 31	02 53						
	05	257 28.6	12.4	302 26.7	13.6	5 36.5	10.2	55.7	S 60	////	01 15	02 40	01 56	02 10	02 26	02 45						
	06	272 28.4	S22 12.7	316 59.3	13.5 S	5 46.7	10.2	55.8														
	07	287 28.1	13.0	331 31.8	13.5	5 56.9	10.2	55.8														
	08	302 27.9	13.4	346 04.3	13.5	6 07.1	10.2	55.8	Lat.	Sun-set	Twilight		Moonset									
	09	317 27.6	13.7	0 36.8	13.4	6 17.3	10.1	55.8			Civil	Naut.	3	4	5	6						
	10	332 27.4	14.0	15 09.2	13.4	6 27.4	10.1	55.9	$^{\circ}$	h	m	h	m	h	m	h	m	h	m	h	m	
	11	347 27.1	14.4	29 41.6	13.3	6 37.5	10.1	55.9	N 72	■	13 37	15 41	13 44	13 35	13 23	13 08						
	12	2 26.9	S22 14.7	44 13.9	13.2 S	6 47.6	10.1	55.9	N 70	■	14 20	15 59	13 48	13 45	13 41	13 38						
	13	17 26.6	15.1	58 46.1	13.2	6 57.7	10.1	56.0	68	12 46	14 49	16 13	13 52	13 53	13 56	14 00						
	14	32 26.4	15.4	73 18.3	13.1	7 07.8	10.0	56.0	66	13 44	15 11	16 24	13 55	14 00	14 07	14 17						
	15	47 26.1	15.7	87 50.4	13.1	7 17.8	10.1	56.0	64	14 17	15 28	16 34	13 57	14 06	14 17	14 32						
	16	62 25.9	16.0	102 22.5	13.1	7 27.9	9.9	56.0	62	14 41	15 42	16 43	13 59	14 11	14 26	14 44						
	17	77 25.6	16.4	116 54.6	12.9	7 37.8	10.0	56.1	60	15 00	15 55	16 50	14 01	14 16	14 33	14 54						
	18	92 25.3	S22 16.7	131 26.5	12.9 S	7 47.8	10.0	56.1	N 58	15 15	16 05	16 57	14 03	14 20	14 39	15 03						
	19	107 25.1	17.0	145 58.4	12.9	7 57.8	9.9	56.1	56	15 29	16 15	17 03	14 04	14 23	14 45	15 11						
	20	122 24.8	17.4	160 30.3	12.8	8 07.7	9.9	56.2	54	15 40	16 23	17 09	14 06	14 27	14 50	15 18						
	21	137 24.6	17.7	175 02.1	12.7	8 17.6	9.8	56.2	52	15 51	16 31	17 14	14 07	14 30	14 55	15 24						
	22	152 24.3	18.0	189 33.8	12.7	8 27.4	9.9	56.2	50	16 00	16 38	17 18	14 08	14 32	14 59	15 30						
23	167 24.1	18.4	204 05.5	12.6	8 37.3	9.8	56.2	45	16 19	16 53	17 29	14 11	14 38	15 08	15 43							
TUESDAY	5 00	182	23.8	S22 18.7	218 37.1	12.6 S	8 47.1	9.8	56.3	N 40	16 35	17 05	17 39	14 13	14 43	15 16	15 53					
	01	197 23.5	19.0	233 08.7	12.5	8 56.9	9.7	56.3	35	16 48	17 16	17 47	14 14	14 47	15 23	16 02						
	02	212 23.3	19.3	247 40.2	12.4	9 06.6	9.7	56.3	30	17 00	17 26	17 56	14 16	14 51	15 28	16 10						
	03	227 23.0	19.7	262 11.6	12.4	9 16.3	9.7	56.4	20	17 20	17 44	18 11	14 19	14 57	15 38	16 23						
	04	242 22.8	20.0	276 43.0	12.3	9 26.0	9.6	56.4	N 10	17 37	18 00	18 26	14 21	15 03	15 47	16 35						
	05	257 22.5	20.3	291 14.3	12.2	9 35.6	9.7	56.4	0	17 54	18 16	18 42	14 23	15 08	15 56	16 46						
	06	272 22.3	S22 20.6	305 45.5	12.2 S	9 45.3	9.5	56.4	S 10	18 11	18 33	19 00	14 26	15 14	16 04	16 57						
	07	287 22.0	20.9	320 16.7	12.1	9 54.8	9.6	56.5	20	18 29	18 53	19 22	14 28	15 20	16 13	17 09						
	08	302 21.7	21.3	334 47.8	12.1	10 04.4	9.5	56.5	30	18 49	19 17	19 49	14 31	15 26	16 23	17 23						
	09	317 21.5	21.6	349 18.9	12.0	10 13.9	9.4	56.5	35	19 02	19 31	20 07	14 32	15 30	16 29	17 30						
	10	332 21.2	21.9	3 49.9	11.9	10 23.3	9.4	56.6	40	19 16	19 48	20 29	14 34	15 34	16 36	17 39						
	11	347 21.0	22.2	18 20.8	11.8	10 32.7	9.4	56.6	45	19 33	20 09	20 57	14 36	15 39	16 44	17 50						
	12	2 20.7	S22 22.5	32 51.6	11.8 S	10 42.1	9.3	56.6	S 50	19 54	20 37	21 38	14 39	15 45	16 53	18 03						
	13	17 20.4	22.9	47 22.4	11.7	10 51.4	9.3	56.6	52	20 04	20 51	22 02	14 40	15 48	16 58	18 09						
	14	32 20.2	23.2	61 53.1	11.6	11 00.7	9.3	56.7	54	20 15	21 07	22 35	14 41	15 51	17 02	18 15						
	15	47 19.9	23.5	76 23.7	11.6	11 10.0	9.2	56.7	56	20 28	21 27	///	14 42	15 54	17 08	18 23						
	16	62 19.7	23.8	90 54.3	11.5	11 19.2	9.1	56.7	58	20 44	21 52	///	14 44	15 58	17 14	18 31						
	17	77 19.4	24.1	105 24.8	11.4	11 28.3	9.1	56.8	S 60	21 02	22 28	///	14 46	16 02	17 21	18 40						
	18	92 19.1	S22 24.4	119 55.2	11.4 S	11 37.4	9.1	56.8														
	19	107 18.9	24.7	134 25.6	11.3	11 46.5	9.0	56.8	Day	Eqn. of Time	Mer. Pass.	MOON										
	20	122 18.6	25.0	148 55.9	11.2	11 55.5	9.0	56.9		00 ^h	12 ^h	Mer. Upper	Mer.									

		ARIES			VENUS -3.4			MARS +1.5			JUPITER -1.6			SATURN +0.8			STARS			
G.M.T.		G.H.A.			G.H.A. Dec.			G.H.A. Dec.			G.H.A. Dec.			G.H.A. Dec.			Name		S.H.A.	Dec.
d	h	° ' "			° ' "			° ' "			° ' "			° ' "					° ' "	° ' "
WEDNESDAY	6 00	74 32.3	195 26.2	S 19 35.6	179 44.8	S 23 14.2	126 56.6	S 19 38.2	135 31.9	S 21 04.5	Acamar	315 47.6	S 40 27.6							
	01	89 34.7	210 25.4	36.3	194 45.3	14.5	141 58.6	38.0	150 34.1	04.5	Achernar	335 55.4	S 57 26.1							
	02	104 37.2	225 24.6	37.0	209 45.8	14.7	157 00.6	37.9	165 36.3	04.4	Acrux	173 53.2	S 62 52.9							
	03	119 39.7	240 23.8	.. 37.7	224 46.2	.. 14.9	172 02.6	.. 37.8	180 38.5	.. 04.4	Adhara	255 42.8	S 28 55.1							
	04	134 42.1	255 23.0	38.5	239 46.7	15.1	187 04.5	37.7	195 40.7	04.3	Aldebaran	291 33.8	N 16 25.9							
	05	149 44.6	270 22.2	39.2	254 47.2	15.3	202 06.5	37.6	210 42.9	04.3										
	06	164 47.1	285 21.5	S 19 39.9	269 47.6	S 23 15.5	217 08.5	S 19 37.5	225 45.1	S 21 04.2	Alioth	166 55.2	N 56 09.8							
	07	179 49.5	300 20.7	40.6	284 48.1	15.7	232 10.5	37.3	240 47.4	04.2	Alkaid	153 30.0	N 49 30.1							
	08	194 52.0	315 19.9	41.4	299 48.6	16.0	247 12.4	37.2	255 49.6	04.2	Al Na'ir	28 32.8	S 47 09.0							
	09	209 54.5	330 19.1	.. 42.1	314 49.1	.. 16.2	262 14.4	.. 37.1	270 51.8	.. 04.1	Alnilam	276 25.6	S 1 13.6							
	10	224 56.9	345 18.3	42.8	329 49.5	16.4	277 16.4	37.0	285 54.0	04.1	Alphard	218 34.3	S 8 29.5							
	11	239 59.4	0 17.5	43.5	344 50.0	16.6	292 18.4	36.9	300 56.2	04.0										
	12	255 01.8	15 16.7	S 19 44.2	359 50.5	S 23 16.8	307 20.3	S 19 36.8	315 58.4	S 21 04.0	Alphecca	126 44.4	N 26 50.6							
	13	270 04.3	30 16.0	45.0	14 50.9	17.0	322 22.3	36.7	331 00.6	03.9	Alpheratz	358 23.8	N 28 52.9							
	14	285 06.8	45 15.2	45.7	29 51.4	17.2	337 24.3	36.5	346 02.8	03.9	Altair	62 46.5	N 8 46.1							
	15	300 09.2	60 14.4	.. 46.4	44 51.9	.. 17.4	352 26.3	.. 36.4	1 05.0	.. 03.8	Ankaa	353 54.0	S 42 31.0							
	16	315 11.7	75 13.6	47.1	59 52.4	17.6	7 28.2	36.3	16 07.2	03.8	Antares	113 14.5	S 26 20.7							
	17	330 14.2	90 12.8	47.8	74 52.8	17.8	22 30.2	36.2	31 09.4	03.8										
	18	345 16.6	105 12.0	S 19 48.5	89 53.3	S 23 18.0	37 32.2	S 19 36.1	46 11.6	S 21 03.7	Arcturus	146 31.6	N 19 22.9							
	19	0 19.1	120 11.2	49.2	104 53.8	18.3	52 34.2	36.0	61 13.8	03.7	Atria	108 51.9	S 68 57.4							
	20	15 21.6	135 10.4	50.0	119 54.2	18.5	67 36.1	35.8	76 16.1	03.6	Avior	234 33.5	S 59 23.0							
	21	30 24.0	150 09.6	.. 50.7	134 54.7	.. 18.7	82 38.1	.. 35.7	91 18.3	.. 03.6	Bellatrix	279 13.5	N 6 18.9							
	22	45 26.5	165 08.8	51.4	149 55.2	18.9	97 40.1	35.6	106 20.5	03.5	Betelgeuse	271 43.2	N 7 24.0							
	23	60 29.0	180 08.1	52.1	164 55.6	19.1	112 42.1	35.5	121 22.7	03.5										
THURSDAY	7 00	75 31.4	195 07.3	S 19 52.8	179 56.1	S 23 19.3	127 44.0	S 19 35.4	136 24.9	S 21 03.4	Canopus	264 12.9	S 52 40.4							
	01	90 33.9	210 06.5	53.5	194 56.6	19.5	142 46.0	35.3	151 27.1	03.4	Capella	281 31.6	N 45 57.5							
	02	105 36.3	225 05.7	54.2	209 57.1	19.7	157 48.0	35.1	166 29.3	03.3	Deneb	49 58.3	N 45 08.9							
	03	120 38.8	240 04.9	.. 54.9	224 57.5	.. 19.9	172 49.9	.. 35.0	181 31.5	.. 03.3	Denebola	183 13.5	N 14 47.1							
	04	135 41.3	255 04.1	55.6	239 58.0	20.1	187 51.9	34.9	196 33.7	03.3	Diphda	349 34.9	S 18 11.9							
	05	150 43.7	270 03.3	56.3	254 58.5	20.3	202 53.9	34.8	211 35.9	03.2										
	06	165 46.2	285 02.5	S 19 57.0	269 58.9	S 23 20.5	217 55.9	S 19 34.7	226 38.1	S 21 03.2	Dubhe	194 39.5	N 61 57.2							
	07	180 48.7	300 01.7	57.7	284 59.4	20.7	232 57.8	34.6	241 40.3	03.1	Elnath	279 01.6	N 28 34.5							
	08	195 51.1	315 00.9	58.4	299 59.9	20.9	247 59.8	34.4	256 42.5	03.1	Eltanin	91 04.8	N 51 29.8							
	09	210 53.6	330 00.1	.. 59.1	315 00.3	.. 21.1	263 01.8	.. 34.3	271 44.7	.. 03.0	Enif	34 25.5	N 9 42.1							
	10	225 56.1	344 59.3	19 59.8	330 00.8	21.3	278 03.7	34.2	286 46.9	03.0	Fomalhaut	16 07.0	S 29 49.6							
	11	240 58.5	359 58.5	20 00.5	345 01.3	21.5	293 05.7	34.1	301 49.1	02.9										
	12	256 01.0	14 57.7	S 20 01.2	0 01.7	S 23 21.7	308 07.7	S 19 34.0	316 51.3	S 21 02.9	Gacrux	172 44.6	S 56 53.6							
	13	271 03.5	29 56.9	01.9	15 02.2	21.9	323 09.7	33.9	331 53.6	02.8	Giennah	176 32.6	S 17 19.6							
	14	286 05.9	44 56.1	02.6	30 02.7	22.1	338 11.6	33.7	346 55.8	02.8	Hadar	149 43.8	S 60 11.0							
	15	301 08.4	59 55.3	.. 03.3	45 03.1	.. 22.3	353 13.6	.. 33.6	1 58.0	.. 02.8	Hamal	328 44.5	N 23 17.0							
	16	316 10.8	74 54.5	04.0	60 03.6	22.5	8 15.6	33.5	17 00.2	02.7	Kaus Aust.	84 35.9	S 34 24.2							
	17	331 13.3	89 53.7	04.7	75 04.1	22.7	23 17.5	33.4	32 02.4	02.7										
	18	346 15.8	104 52.9	S 20 05.4	90 04.5	S 23 22.9	38 19.5	S 19 33.3	47 04.6	S 21 02.6	Kochab	137 19.4	N 74 18.6							
	19	1 18.2	119 52.1	06.0	105 05.0	23.1	53 21.5	33.2	62 06.8	02.6	Markab	14 17.2	N 15 00.1							
	20	16 20.7	134 51.3	06.7	120 05.5	23.3	68 23.4	33.0	77 09.0	02.5	Menkar	314 55.6	N 3 56.4							
	21	31 23.2	149 50.5	.. 07.4	135 05.9	.. 23.5	83 25.4	.. 32.9	92 11.2	.. 02.5	Menkent	148 53.9	S 36 10.7							
	22	46 25.6	164 49.7	08.1	150 06.4	23.7	98 27.4	32.8	107 13.4	02.4	Miaplacidus	221 47.5	S 69 33.3							
	23	61 28.1	179 48.9	08.8	165 06.9	23.9	113 29.3	32.7	122 15.6	02.4										
FRIDAY	8 00	76 30.6	194 48.1	S 20 09.5	180 07.3	S 23 24.1	128 31.3	S 19 32.6	137 17.8	S 21 02.3	Mirfak	309 35.8	N 49 43.6							
	01	91 33.0	209 47.3	10.2	195 07.8	24.3	143 33.3	32.4	152 20.0	02.3	Nunki	76 47.0	S 26 20.7							
	02	106 35.5	224 46.5	10.8	210 08.2	24.5	158 35.3	32.3	167 22.2	02.2	Peacock	54 21.1	S 56 51.7							
	03	121 38.0	239 45.7	.. 11.5	225 08.7	.. 24.7	173 37.2	.. 32.2	182 24.4	.. 02.2	Pollux	244 15.1	N 28 07.0							
	04	136 40.4	254 44.9	12.2	240 09.2	24.9	188 39.2	32.1	197 26.6	02.2	Procyon	245 40.3	N 5 19.4							
	05	151 42.9	269 44.0	12.9	255 09.6	25.1	203 41.2	32.0	212 28.8	02.1										
	06	166 45.3	284 43.2	S 20 13.6	270 10.1	S 23 25.3	218 43.1	S 19 31.9	227 31.0	S 21 02.1	Rasalhague	96 43.0	N 12 35.4							
	07	181 47.8	299 42.4	14.2	285 10.6	25.5	233 45.1	31.7	242 33.2	02.0	Regulus	208 24.9	N 12 09.2							
	08	196 50.3	314 41.6	14.9	300 11.0	25.7	248 47.1	31.6	257 35.4	02.0	Rigel	281 49.2	S 8 14.8							
	09	211 52.7	329 40.8	.. 15.6	315 11.5	.. 25.8	263 49.0	.. 31.5	272 37.6	.. 01.9	Rigil Kent.	140 45.6	S 60 40.4							
	10	226 55.2	344 40.0	16.3	330 11.9	26.0	278 51.0	31.4	287 39.8	01.9	Sabik	102 57.7	S 15 40.6							
	11	241 57.7	359 39.2	16.9	345 12.4	26.2	293 53.0	31.3	302 42.0	01.8										
	12	257 00.1	14 38.4	S 20 17.6	0 12.9	S 23 26.4	308 54.9	S 19 31.1	317 44.2	S 21 01.8	Schedar	350 24.8	N 56 19.9							
	13	272 02.6	29 37.6	18.3	15 13.3	26.6	323 56.9	31.0	332 46.4	01.7	Shaula	97 15.3	S 37 04.5							
	14	287 05.1	44 36.8	18.9	30 13.8	26.8	338 58.9	30.9	347 48.6	01.7	Sirius	259 07.8	S 16 39.8							
	15	302 07.5	59 35.9	.. 19.6	45 14.3	.. 27.0	354 00.8	.. 30.8	2 50.8	.. 01.7	Spica	159 12.6	S 10 57.6							
	16	317 10.0	74 35.1	20.3	60 14.7	27.2	9 02.8	30.7	17 53.1	01.6	Suhail	223 20.9	S 43 16.5							
	17	332 12.5	89 34.3	20.9	75 15.2	27.4	24 04.8	30.6	32 55.3	01.6										
	18	347 14.9	104 33.5	S 20 21.6	90 15.6	S 23 27.6	39 06.7	S 19 30.4	47 57.5	S 21 01.5	Vega	81 05.8	N 38 45.1							
	19	2 17.4	119 32.7	22.3	105 16.1	27.7	54 08.7	30.3	62 59.7	01.5	Zuben'ubi	137 49.0	S 15 52.9							
	20	17 19.8	134 31.9	22.9	120 16.6	27.9	69 10.7	30.2	78 01.9	01.4										
	21	32 22.3	149 31.1	.. 23.6	135 17.0	.. 28.1	84 12.6	.. 30.1	93 04.1	.. 01.4										
	22	47 24.8	164 30.2	24.3	150 17.5	28.3	99 14.6	30.0	108 06.3	01.3										
	23	62 27.2	179 29.4	24.9	165 17.9	28.5	114 16.6	29.8	123 08.5	01.3										
Mer. Pass. 18 54.8		v -0.8 d 0.7			v 0.5 d 0.2			v 2.0 d 0.1			v 2.2 d 0.0			S.H.A. Mer. Pass. h m						

G.M.T.		SUN		MOON				Lat.	Twilight		Sun-rise	Moonrise										
		G.H.A.	Dec.	G.H.A.	φ	Dec.	d		H.P.	Naut.		Civil	6	7	8	9						
d	h	$^{\circ}$	$'$	$^{\circ}$	$'$	$^{\circ}$	$'$	$^{\circ}$	$'$	$^{\circ}$	$'$	$^{\circ}$	$'$	$^{\circ}$	$'$	$^{\circ}$	$'$	$^{\circ}$	$'$			
WEDNESDAY	6	00	182	17-6	S22	26-3	206	56-3	11-0	S12	31-0	8-8	57-0	N 72	08 05	10 16	07 43	10 03	11 07	13 05		
	01	01	197	17-3		26-6	221	26-3	10-8	12	39-8	8-6	57-0	N 70	07 47	09 29	07 15	09 07	11 07	13 05		
	02	02	212	17-0		26-9	235	56-1	10-8	12	48-4	8-7	57-0	68	07 33	08 58	11 17	06 54	08 34	10 11		
	03	03	227	16-8		27-2	250	25-9	10-7	12	57-1	8-5	57-1	66	07 21	08 35	10 06	06 37	08 10	09 38		
	04	04	242	16-5		27-5	264	55-6	10-7	13	05-6	8-6	57-1	64	07 11	08 17	09 31	06 24	07 51	09 14		
	05	05	257	16-3		27-8	279	25-3	10-5	13	14-2	8-4	57-1	62	07 02	08 02	09 05	06 12	07 35	08 55		
	06	06	272	16-0	S22	28-1	293	54-8	10-5	S13	22-6	8-4	57-2	60	06 54	07 50	08 46	06 03	07 23	08 39		
	07	07	287	15-7		28-4	308	24-3	10-4	13	31-0	8-3	57-2	N 58	06 47	07 39	08 29	05 55	07 12	08 26		
	08	08	302	15-5		28-7	322	53-7	10-4	13	39-3	8-3	57-2	56	06 41	07 29	08 16	05 47	07 02	08 14		
	09	09	317	15-2		29-0	337	23-1	10-2	13	47-6	8-2	57-2	54	06 35	07 21	08 04	05 41	06 54	08 05		
	10	10	332	14-9		29-3	351	52-3	10-2	13	55-8	8-1	57-3	52	06 30	07 13	07 53	05 35	06 46	07 56		
	11	11	347	14-7		29-6	6	21-5	10-1	14	03-9	8-1	57-3	50	06 25	07 06	07 44	05 29	06 39	07 48		
	12	12	2	14-4	S22	29-9	20	50-6	10-1	S14	12-0	8-0	57-3	N 40	06 04	06 38	07 08	05 09	06 13	07 17		
	13	13	17	14-1		30-2	35	19-7	9-9	14	20-0	7-9	57-4	35	05 55	06 27	06 54	05 01	06 03	07 05		
	14	14	32	13-9		30-5	49	48-6	9-9	14	27-9	7-9	57-4	30	05 47	06 17	06 43	04 54	05 54	06 55		
	15	15	47	13-6		30-8	64	17-5	9-8	14	35-8	7-8	57-4	20	05 31	05 58	06 22	04 42	05 39	06 38		
	16	16	62	13-3		31-1	78	46-3	9-8	14	43-6	7-7	57-4	N 10	05 16	05 42	06 04	04 31	05 26	06 23		
	17	17	77	13-1		31-4	93	15-1	9-6	14	51-3	7-6	57-5	0	04 59	05 25	05 48	04 22	05 13	06 08		
	18	18	92	12-8	S22	31-7	107	43-7	9-6	S14	58-9	7-6	57-5	S 10	04 41	05 08	05 31	04 12	05 01	05 54		
	19	19	107	12-5		32-0	122	12-3	9-5	15	06-5	7-5	57-5	20	04 19	04 48	05 13	04 01	04 48	05 39		
	20	20	122	12-3		32-3	136	40-8	9-5	15	14-0	7-4	57-6	30	03 51	04 24	04 51	03 50	04 33	05 22		
	21	21	137	12-0		32-6	151	09-3	9-3	15	21-4	7-4	57-6	35	03 33	04 10	04 39	03 43	04 25	05 12		
	22	22	152	11-7		32-9	165	37-6	9-3	15	28-8	7-2	57-6	40	03 11	03 52	04 25	03 35	04 15	05 01		
	23	23	167	11-5		33-2	180	05-9	9-2	15	36-0	7-2	57-6	45	02 42	03 31	04 07	03 26	04 04	04 47		
THURSDAY	7	00	182	11-2	S22	33-5	194	34-1	9-1	S15	43-2	7-1	57-7	S 50	02 00	03 03	03 46	03 16	03 50	04 31		
	01	01	197	10-9		33-8	209	02-2	9-1	15	50-3	7-0	57-7	52	01 36	02 48	03 36	03 11	03 43	04 23		
	02	02	212	10-7		34-0	223	30-3	9-0	15	57-3	6-9	57-7	54	01 00	02 32	03 24	03 05	03 36	04 15		
	03	03	227	10-4		34-3	237	58-3	8-9	16	04-2	6-9	57-8	56	///	02 12	03 11	02 59	03 29	04 06		
	04	04	242	10-1		34-6	252	26-2	8-8	16	11-1	6-7	57-8	58	///	01 45	02 55	02 53	03 20	03 55		
	05	05	257	09-9		34-9	266	54-0	8-8	16	17-8	6-7	57-8	S 60	///	01 06	02 36	02 45	03 10	03 43		
	06	06	272	09-6	S22	35-2	281	21-8	8-7	S16	24-5	6-6	57-8		Sun-set		Twilight		Moonset			
	07	07	287	09-3		35-5	295	49-5	8-6	16	31-1	6-5	57-9	Lat.	Naut.		Civil		6	7	8	9
	08	08	302	09-1		35-8	310	17-1	8-6	16	37-6	6-4	57-9		h	m	h	m	h	m	h	m
	09	09	317	08-8		36-0	324	44-7	8-4	16	44-0	6-3	57-9	N 72	13 26	15 37	13 08	12 38	13 31	13 34		
	10	10	332	08-5		36-3	339	12-1	8-4	16	50-3	6-2	58-0	N 70	12 26	14 44	15 55	13 38	13 35	13 31		
	11	11	347	08-3		36-6	353	39-5	8-4	16	56-5	6-1	58-0	68	12 26	14 44	16 10	14 00	14 09	14 27		
	12	12	2	08-0	S22	36-9	8	06-9	8-2	S17	02-6	6-1	58-0	66	13 36	15 07	16 22	14 17	14 33	15 01		
	13	13	17	07-7		37-2	22	34-1	8-2	17	08-7	5-9	58-0	64	14 12	15 25	16 32	14 32	14 53	15 25		
	14	14	32	07-4		37-4	37	01-3	8-1	17	14-6	5-9	58-1	62	14 37	15 40	16 41	14 44	15 09	15 44		
	15	15	47	07-2		37-7	51	28-4	8-1	17	20-5	5-7	58-1	60	14 57	15 53	16 49	14 54	15 22	16 00		
	16	16	62	06-9		38-0	65	55-5	7-9	17	26-2	5-6	58-1	N 58	15 13	16 04	16 56	15 03	15 34	16 14		
	17	17	77	06-6		38-3	80	22-4	8-0	17	31-8	5-6	58-1	56	15 27	16 13	17 02	15 11	15 44	16 25		
	18	18	92	06-4	S22	38-6	94	49-4	7-8	S17	37-4	5-4	58-2	54	15 39	16 22	17 08	15 18	15 53	16 36		
	19	19	107	06-1		38-8	109	16-2	7-8	17	42-8	5-4	58-2	52	15 50	16 30	17 13	15 24	16 00	16 45		
	20	20	122	05-8		39-1	123	43-0	7-7	17	48-2	5-2	58-2	50	15 59	16 37	17 18	15 30	16 08	16 53		
	21	21	137	05-5		39-4	138	09-7	7-6	17	53-4	5-1	58-2	45	16 19	16 52	17 29	15 43	16 23	17 10		
	22	22	152	05-3		39-7	152	36-3	7-6	17	58-5	5-1	58-3	N 40	16 35	17 05	17 39	15 53	16 35	17 24		
	23	23	167	05-0		39-9	167	02-9	7-5	18	03-6	4-9	58-3	35	16 48	17 16	17 48	16 02	16 46	17 36		
FRIDAY	8	00	182	04-7	S22	40-2	181	29-4	7-5	S18	08-5	4-8	58-3	30	17 00	17 26	17 56	16 10	16 56	17 47		
	01	01	197	04-4		40-5	195	55-9	7-3	18	13-3	4-7	58-3	20	17 21	17 45	18 12	16 23	17 12	18 05		
	02	02	212	04-2		40-7	210	22-2	7-4	18	18-0	4-6	58-4	N 10	17 38	18 01	18 27	16 35	17 26	18 21		
	03	03	227	03-9		41-0	224	48-6	7-2	18	22-6	4-5	58-4	0	17 55	18 18	18 44	16 46	17 39	18 36		
	04	04	242	03-6		41-3	239	14-8	7-2	18	27-1	4-4	58-4	S 10	18 12	18 35	19 02	16 57	17 53	18 50		
	05	05	257	03-3		41-5	253	41-0	7-2	18	31-5	4-2	58-4	20	18 30	18 55	19 24	17 09	18 07	19 06		
	06	06	272	03-1	S22	41-8	268	07-2	7-1	S18	35-7	4-2	58-5	30	18 52	19 19	19 52	17 23	18 24	19 25		
	07	07	287	02-8		42-1	282	33-3	7-0	18	39-9	4-0	58-5	35	19 04	19 34	20 10	17 30	18 33	19 35		
	08	08	302	02-5		42-3	296	59-3	6-9	18	43-9	3-9	58-5	40	19 19	19 51	20 32	17 39	18 44	19 47		
	09	09	317	02-2		42-6	311	25-2	7-0	18	47-8	3-9	58-5	45	19 36	20 13	21 01	17 50	18 56	20 01		
	10	10	332	02-0		42-9	325	51-2	6-8	18	51-7	3-7	58-6	S 50	19 57	20 41	21 44	18 03	19 12	20 18		
	11	11	347	01-7		43-1	340	17-0	6-8	18	55-4	3-5	58-6	52	20 08	20 55	22 09	18 09	19 19	20 26		
	12	12	2	01-4	S22	43-4	354	42-8	6-8	S18	58-9	3-5	58-6	54	20 19	21 12	22 45	18 15	19 27	20 36		
	13	13	17	01-1		43-7	9	08-6	6-7	19	02-4	3-										

G.M.T.		ARIES			VENUS -3.4			MARS +1.5			JUPITER -1.6			SATURN +0.8			STARS		
		G.H.A.	G.H.A.	Dec.	G.H.A.	Dec.	G.H.A.	Dec.	G.H.A.	Dec.	G.H.A.	Dec.	Name	S.H.A.	Dec.				
SATURDAY	d h	d h	d h	d h	d h	d h	d h	d h	d h	d h	d h	d h	d h	d h	d h	d h	d h	d h	
	9 00	77 29.7	194 28.6	S20 25.6	180 18.4	S23 28.7	129 18.5	S19 29.7	138 10.7	S21 01.2	Acamar	315 47.6	S 40 27.6						
	01	92 32.2	209 27.8	26.2	195 18.9	28.9	144 20.5	29.6	153 12.9	01.2	Achernar	335 55.5	S 57 26.1						
	02	107 34.6	224 27.0	26.9	210 19.3	29.0	159 22.5	29.5	168 15.1	01.2	Acrux	173 53.1	S 62 52.9						
	03	122 37.1	239 26.2	27.6	225 19.8	29.2	174 24.4	29.4	183 17.3	01.1	Adhara	255 42.8	S 28 55.2						
	04	137 39.6	254 25.3	28.2	240 20.2	29.4	189 26.4	29.2	198 19.5	01.1	Aldebaran	291 33.8	N 16 25.9						
	05	152 42.0	269 24.5	28.9	255 20.7	29.6	204 28.3	29.1	213 21.7	01.0									
	06	167 44.5	284 23.7	S20 29.5	270 21.2	S23 29.8	219 30.3	S19 29.0	228 23.9	S21 01.0	Alioth	166 55.2	N 56 09.8						
	07	182 46.9	299 22.9	30.2	285 21.6	30.0	234 32.3	28.9	243 26.1	00.9	Alkaid	153 30.0	N 49 30.1						
	08	197 49.4	314 22.1	30.8	300 22.1	30.1	249 34.2	28.8	258 28.3	00.9	Al Na'ir	28 32.8	S 47 09.0						
	09	212 51.9	329 21.2	31.5	315 22.5	30.3	264 36.2	28.6	273 30.5	00.8	Alnilam	276 25.6	S 1 13.6						
	10	227 54.3	344 20.4	32.1	330 23.0	30.5	279 38.2	28.5	288 32.7	00.8	Alphard	218 34.3	S 8 29.5						
	11	242 56.8	359 19.6	32.8	345 23.4	30.7	294 40.1	28.4	303 34.9	00.7									
	12	257 59.3	14 18.8	S20 33.4	0 23.9	S23 30.9	309 42.1	S19 28.3	318 37.1	S21 00.7	Alphecca	126 44.4	N 26 50.6						
	13	273 01.7	29 17.9	34.1	15 24.4	31.1	324 44.1	28.2	333 39.3	00.6	Alpheratz	358 23.8	N 28 52.9						
	14	288 04.2	44 17.1	34.7	30 24.8	31.2	339 46.0	28.0	348 41.5	00.6	Altair	62 46.5	N 8 46.1						
	15	303 06.7	59 16.3	35.4	45 25.3	31.4	354 48.0	27.9	3 43.7	00.5	Ankaa	353 54.0	S 42 31.0						
	16	318 09.1	74 15.5	36.0	60 25.7	31.6	9 49.9	27.8	18 45.9	00.5	Antares	113 14.5	S 26 20.7						
	17	333 11.6	89 14.6	36.6	75 26.2	31.8	24 51.9	27.7	33 48.1	00.4									
	18	348 14.1	104 13.8	S20 37.3	90 26.6	S23 31.9	39 53.9	S19 27.6	48 50.3	S21 00.4	Arcturus	146 31.6	N 19 22.9						
	19	3 16.5	119 13.0	37.9	105 27.1	32.1	54 55.8	27.4	63 52.5	00.4	Atria	108 51.9	S 68 57.4						
	20	18 19.0	134 12.2	38.6	120 27.6	32.3	69 57.8	27.3	78 54.7	00.3	Avior	234 33.5	S 59 23.0						
	21	33 21.4	149 11.3	39.2	135 28.0	32.5	84 59.8	27.2	93 56.9	00.3	Bellatrix	279 13.5	N 6 18.9						
	22	48 23.9	164 10.5	39.8	150 28.5	32.7	100 01.7	27.1	108 59.1	00.2	Betelgeuse	271 43.2	N 7 24.0						
	23	63 26.4	179 09.7	40.5	165 28.9	32.8	115 03.7	27.0	124 01.3	00.2									
SUNDAY	10 00	78 28.8	194 08.9	S20 41.1	180 29.4	S23 33.0	130 05.6	S19 26.8	139 03.5	S21 00.1	Canopus	264 12.9	S 52 40.5						
	01	93 31.3	209 08.0	41.7	195 29.8	33.2	145 07.6	26.7	154 05.7	00.1	Capella	281 31.6	N 45 57.6						
	02	108 33.8	224 07.2	42.4	210 30.3	33.4	160 09.6	26.6	169 07.9	00.0	Deneb	49 58.3	N 45 08.9						
	03	123 36.2	239 06.4	43.0	225 30.7	33.5	175 11.5	26.5	184 10.1	21 00.0	Denebola	183 13.5	N 14 47.1						
	04	138 38.7	254 05.5	43.6	240 31.2	33.7	190 13.5	26.4	199 12.3	20 59.9	Diphda	349 34.9	S 18 11.9						
	05	153 41.2	269 04.7	44.3	255 31.7	33.9	205 15.4	26.2	214 14.5	59.9									
	06	168 43.6	284 03.9	S20 44.9	270 32.1	S23 34.1	220 17.4	S19 26.1	229 16.7	S20 59.8	Dubhe	194 39.5	N 61 57.2						
	07	183 46.1	299 03.0	45.5	285 32.6	34.2	235 19.4	26.0	244 18.9	59.8	Elnath	279 01.6	N 28 34.5						
	08	198 48.6	314 02.2	46.2	300 33.0	34.4	250 21.3	25.9	259 21.1	59.7	Eltanin	91 04.8	N 51 29.8						
	09	213 51.0	329 01.4	46.8	315 33.5	34.6	265 23.3	25.8	274 23.3	59.7	Enif	34 25.5	N 9 42.1						
	10	228 53.5	344 00.5	47.4	330 33.9	34.7	280 25.2	25.6	289 25.5	59.6	Fomalhaut	16 07.0	S 29 49.6						
	11	243 55.9	358 59.7	48.0	345 34.4	34.9	295 27.2	25.5	304 27.7	59.6									
	12	258 58.4	13 58.9	S20 48.6	0 34.8	S23 35.3	310 29.2	S19 25.4	319 29.9	S20 59.6	Gacrux	172 44.6	S 56 53.6						
	13	274 00.9	28 58.0	49.3	15 35.3	35.3	325 31.1	25.3	334 32.1	59.5	Gienah	176 32.5	S 17 19.6						
	14	289 03.3	43 57.2	49.9	30 35.7	35.4	340 33.1	25.1	349 34.3	59.5	Hadar	149 43.7	S 60 11.0						
	15	304 05.8	58 56.4	50.5	45 36.2	35.6	355 35.0	25.0	4 36.5	59.4	Hamal	328 44.6	N 23 17.0						
	16	319 08.3	73 55.5	51.1	60 36.6	35.8	10 37.0	24.9	19 38.7	59.4	Kaus Aust.	84 35.9	S 34 24.2						
	17	334 10.7	88 54.7	51.8	75 37.1	35.9	25 39.0	24.8	34 40.9	59.3									
	18	349 13.2	103 53.9	S20 52.4	90 37.5	S23 36.1	40 40.9	S19 24.7	49 43.1	S20 59.3	Kochab	137 19.4	N 74 18.6						
	19	4 15.7	118 53.0	53.0	105 38.0	36.3	55 42.9	24.5	64 45.3	59.2	Markab	14 17.2	N 15 00.1						
	20	19 18.1	133 52.2	53.6	120 38.4	36.4	70 44.8	24.4	79 47.5	59.2	Menkar	314 55.6	N 3 56.4						
	21	34 20.6	148 51.4	54.2	135 38.9	36.6	85 46.8	24.3	94 49.7	59.1	Menkent	148 53.9	S 36 10.7						
	22	49 23.1	163 50.5	54.8	150 39.3	36.8	100 48.8	24.2	109 51.9	59.1	Miaplacidus	221 47.4	S 69 33.3						
	23	64 25.5	178 49.7	55.4	165 39.8	36.9	115 50.7	24.1	124 54.1	59.0									
	MONDAY	11 00	79 28.0	193 48.8	S20 56.0	180 40.3	S23 37.1	130 52.7	S19 23.9	139 56.3	S20 59.0	Mirfak	309 35.8	N 49 43.6					
01		94 30.4	208 48.0	56.7	195 40.7	37.3	145 54.6	23.8	154 58.5	58.9	Nunki	76 47.0	S 26 20.7						
02		109 32.9	223 47.2	57.3	210 41.2	37.4	160 56.6	23.7	170 00.7	58.9	Peacock	54 21.1	S 56 51.7						
03		124 35.4	238 46.3	57.9	225 41.6	37.6	175 58.5	23.6	185 02.9	58.8	Pollux	244 15.1	N 28 07.0						
04		139 37.8	253 45.5	58.5	240 42.1	37.8	191 00.5	23.4	200 05.0	58.8	Procyon	245 40.3	N 5 19.4						
05		154 40.3	268 44.6	59.1	255 42.5	37.9	206 02.5	23.3	215 07.2	58.7									
06		169 42.8	283 43.8	S20 59.7	270 43.0	S23 38.1	221 04.4	S19 23.2	230 09.4	S20 58.7	Rasalhague	96 43.0	N 12 35.3						
07		184 45.2	298 43.0	21 00.3	285 43.4	38.3	236 06.4	23.1	245 11.6	58.7	Regulus	208 24.9	N 12 09.2						
08		199 47.7	313 42.1	00.9	300 43.9	38.4	251 08.3	23.0	260 13.8	58.6	Rigel	281 49.2	S 8 14.8						
09		214 50.2	328 41.3	01.5	315 44.3	38.6	266 10.3	22.8	275 16.0	58.6	Rigel Kent.	140 45.6	S 60 40.4						
10		229 52.6	343 40.4	02.1	330 44.8	38.7	281 12.2	22.7	290 18.2	58.5	Sabik	102 57.7	S 15 40.6						
11		244 55.1	358 39.6	02.7	345 45.2	38.9	296 14.2	22.6	305 20.4	58.5									
12		259 57.6	13 38.7	S21 03.3	0 45.6	S23 39.1	311 16.1	S19 22.5	320 22.6	S20 58.4	Schedar	350 24.8	N 56 19.9						
13		275 00.0	28 37.9	03.9	15 46.1	39.2	326 18.1	22.3	335 24.8	58.4	Shaula	97 15.3	S 37 04.5						
14		290 02.5	43 37.0	04.5	30 46.5	39.4	341 20.1	22.2	350 27.0	58.3	Sirius	259 07.8	S 16 39.8						
15		305 04.9	58 36.2	05.1	45 47.0	39.6	356 22.0	22.1	5 29.2	58.3	Spica	159 12.6	S 10 57.6						
16		320 07.4	73 35.4	05.7	60 47.4	39.7	11 24.0	22.0	20 31.4	58.2	Suhail	223 20.9	S						

G.M.T.	ARIES			VENUS -3.4			MARS +1.5			JUPITER -1.6			SATURN +0.8			STARS		
	G.H.A.	G.H.A.	Dec.	G.H.A.	G.H.A.	Dec.	G.H.A.	G.H.A.	Dec.	G.H.A.	G.H.A.	Dec.	G.H.A.	G.H.A.	Dec.	Name	S.H.A.	Dec.
TUESDAY																		
12 00	80 27.1	193 28.6	S21 10.4	180 51.0	S23 41.0		131 39.6	S19 21.0		140 49.0	S20 57.8		Acamar	315 47.6	S 40 27.6			
01	95 29.6	208 27.7	11.0	195 51.5	41.1		146 41.6	20.9		155 51.2	57.8		Achernar	335 55.5	S 57 26.1			
02	110 32.0	223 26.9	11.5	210 51.9	41.3		161 43.5	20.7		170 53.4	57.7		Acrux	173 53.1	S 62 52.9			
03	125 34.5	238 26.0	12.1	225 52.4	41.4		176 45.5	20.6		185 55.6	57.7		Adhara	255 42.8	S 28 55.2			
04	140 37.0	253 25.2	12.7	240 52.8	41.6		191 47.4	20.5		200 57.8	57.7		Aldebaran	291 33.8	N 16 25.9			
05	155 39.4	268 24.3	13.3	255 53.3	41.7		206 49.4	20.4		216 00.0	57.6							
06	170 41.9	283 23.5	S21 13.9	270 53.7	S23 41.9		221 51.3	S19 20.2		231 02.1	S20 57.6		Alioth	166 55.2	N 56 09.8			
07	185 44.4	298 22.6	14.4	285 54.1	42.0		236 53.3	20.1		246 04.3	57.5		Alkaid	153 29.9	N 49 30.1			
08	200 46.8	313 21.7	15.0	300 54.6	42.2		251 55.2	20.0		261 06.5	57.5		Al Na'ir	28 32.9	S 47 09.0			
09	215 49.3	328 20.9	15.6	315 55.0	42.4		266 57.2	19.9		276 08.7	57.4		Alnilam	276 25.6	S 1 13.6			
10	230 51.8	343 20.0	16.2	330 55.5	42.5		281 59.1	19.7		291 10.9	57.4		Alphard	218 34.2	S 8 29.5			
11	245 54.2	358 19.2	16.7	345 55.9	42.7		297 01.1	19.6		306 13.1	57.3							
12	260 56.7	13 18.3	S21 17.3	0 56.4	S23 42.8		312 03.1	S19 19.5		321 15.3	S20 57.3		Alphecca	126 44.4	N 26 50.6			
13	275 59.2	28 17.5	17.9	15 56.8	43.0		327 05.0	19.4		336 17.5	57.2		Alpheratz	358 23.8	N 28 52.9			
14	291 01.6	43 16.6	18.4	30 57.3	43.1		342 07.0	19.3		351 19.7	57.2		Altair	62 46.6	N 8 46.1			
15	306 04.1	58 15.8	19.0	45 57.7	43.3		357 08.9	19.1		6 21.9	57.1		Ankaa	353 54.1	S 42 31.0			
16	321 06.5	73 14.9	19.6	60 58.1	43.4		12 10.9	19.0		21 24.1	57.1		Antares	113 14.5	S 26 20.7			
17	336 09.0	88 14.0	20.1	75 58.6	43.5		27 12.8	18.9		36 26.3	57.0							
18	351 11.5	103 13.2	S21 20.7	90 59.0	S23 43.7		42 14.8	S19 18.8		51 28.5	S20 57.0		Arcturus	146 31.6	N 19 22.9			
19	6 13.9	118 12.3	21.3	105 59.5	43.8		57 16.7	18.6		66 30.7	56.9		Atria	108 51.9	S 68 57.4			
20	21 16.4	133 11.5	21.8	120 59.9	44.0		72 18.7	18.5		81 32.9	56.9		Avior	234 33.4	S 59 23.0			
21	36 18.9	148 10.6	22.4	136 00.4	44.1		87 20.6	18.4		96 35.1	56.8		Bellatrix	279 13.5	N 6 18.9			
22	51 21.3	163 09.7	23.0	151 00.8	44.3		102 22.6	18.3		111 37.3	56.8		Betelgeuse	271 43.2	N 7 24.0			
23	66 23.8	178 08.9	23.5	166 01.2	44.4		117 24.5	18.1		126 39.5	56.7							
WEDNESDAY																		
13 00	81 26.3	193 08.0	S21 24.1	181 01.7	S23 44.6		132 26.5	S19 18.0		141 41.6	S20 56.7		Canopus	264 12.9	S 52 40.5			
01	96 28.7	208 07.2	24.6	196 02.1	44.7		147 28.4	17.9		156 43.8	56.6		Capella	281 31.6	N 45 57.6			
02	111 31.2	223 06.3	25.2	211 02.6	44.9		162 30.4	17.8		171 46.0	56.6		Deneb	49 58.3	N 45 08.9			
03	126 33.7	238 05.4	25.8	226 03.0	45.0		177 32.3	17.6		186 48.2	56.5		Denebola	183 13.5	N 14 47.1			
04	141 36.1	253 04.6	26.3	241 03.5	45.2		192 34.3	17.5		201 50.4	56.5		Diphda	349 34.9	S 18 11.9			
05	156 38.6	268 03.7	26.9	256 03.9	45.3		207 36.2	17.4		216 52.6	56.4							
06	171 41.0	283 02.9	S21 27.4	271 04.3	S23 45.4		222 38.2	S19 17.3		231 54.8	S20 56.4		Dubhe	194 39.5	N 61 57.2			
07	186 43.5	298 02.0	28.0	286 04.8	45.6		237 40.1	17.1		246 57.0	56.3		Elnath	279 01.6	N 28 34.5			
08	201 46.0	313 01.1	28.5	301 05.2	45.7		252 42.1	17.0		261 59.2	56.3		Eltanin	91 04.8	N 51 29.7			
09	216 48.4	328 00.3	29.1	316 05.7	45.9		267 44.0	16.9		277 01.4	56.2		Enif	34 25.6	N 9 42.1			
10	231 50.9	342 59.4	29.6	331 06.1	46.0		282 46.0	16.8		292 03.6	56.2		Fomalhaut	16 07.0	S 29 49.6			
11	246 53.4	357 58.5	30.2	346 06.5	46.1		297 47.9	16.6		307 05.8	56.1							
12	261 55.8	12 57.7	S21 30.7	1 07.0	S23 46.3		312 49.9	S19 16.5		322 08.0	S20 56.1		Gacrux	172 44.5	S 56 53.6			
13	276 58.3	27 56.8	31.3	16 07.4	46.4		327 51.8	16.4		337 10.2	56.1		Gienah	176 32.5	S 17 19.6			
14	292 00.8	42 55.9	31.8	31 07.9	46.6		342 53.8	16.3		352 12.3	56.0		Hadar	149 43.7	S 60 11.0			
15	307 03.2	57 55.1	32.3	46 08.3	46.7		357 55.7	16.1		7 14.5	56.0		Hamal	328 44.6	N 23 17.0			
16	322 05.7	72 54.2	32.9	61 08.8	46.8		12 57.7	16.0		22 16.7	55.9		Kaus Aust.	84 35.9	S 34 24.2			
17	337 08.2	87 53.3	33.4	76 09.2	47.0		27 59.6	15.9		37 18.9	55.9							
18	352 10.6	102 52.5	S21 34.0	91 09.6	S23 47.1		43 01.6	S19 15.8		52 21.1	S20 55.8		Kochab	137 19.4	N 74 18.6			
19	7 13.1	117 51.6	34.5	106 10.1	47.3		58 03.5	15.6		67 23.3	55.8		Markab	14 17.2	N 15 00.1			
20	22 15.5	132 50.7	35.0	121 10.5	47.4		73 05.5	15.5		82 25.5	55.7		Menkar	314 55.6	N 3 56.4			
21	37 18.0	147 49.9	35.6	136 10.9	47.5		88 07.4	15.4		97 27.7	55.7		Menkent	148 53.9	S 36 10.7			
22	52 20.5	162 49.0	36.1	151 11.4	47.7		103 09.4	15.2		112 29.9	55.6		Miaplacidus	221 47.4	S 69 33.4			
23	67 22.9	177 48.1	36.6	166 11.8	47.8		118 11.3	15.1		127 32.1	55.6							
THURSDAY																		
14 00	82 25.4	192 47.2	S21 37.2	181 12.3	S23 47.9		133 13.3	S19 15.0		142 34.3	S20 55.5		Mirfak	309 35.8	N 49 43.6			
01	97 27.9	207 46.4	37.7	196 12.7	48.1		148 15.2	14.9		157 36.4	55.5		Nunki	76 47.0	S 26 20.7			
02	112 30.3	222 45.5	38.2	211 13.1	48.2		163 17.2	14.7		172 38.6	55.4		Peacock	54 21.1	S 56 51.7			
03	127 32.8	237 44.6	38.8	226 13.6	48.3		178 19.1	14.6		187 40.8	55.4		Pollux	244 15.1	N 28 07.0			
04	142 35.3	252 43.8	39.3	241 14.0	48.5		193 21.1	14.5		202 43.0	55.3		Procyon	245 40.3	N 5 19.4			
05	157 37.7	267 42.9	39.8	256 14.5	48.6		208 23.0	14.4		217 45.2	55.3							
06	172 40.2	282 42.0	S21 40.3	271 14.9	S23 48.7		223 25.0	S19 14.2		232 47.4	S20 55.2		Rasalhague	96 43.0	N 12 35.3			
07	187 42.6	297 41.1	40.9	286 15.3	48.9		238 26.9	14.1		247 49.6	55.2		Regulus	208 24.9	N 12 09.2			
08	202 45.1	312 40.3	41.4	301 15.8	49.0		253 28.8	14.0		262 51.8	55.1		Rigel	281 49.2	S 8 14.8			
09	217 47.6	327 39.4	41.9	316 16.2	49.1		268 30.8	13.9		277 54.0	55.1		Rigel Kent.	140 45.5	S 60 40.3			
10	232 50.0	342 38.5	42.4	331 16.6	49.3		283 32.7	13.7		292 56.2	55.0		Sabik	102 57.6	S 15 40.6			
11	247 52.5	357 37.6	43.0	346 17.1	49.4		298 34.7	13.6		307 58.4	55.0							
12	262 55.0	12 36.8	S21 43.5	1 17.5	S23 49.5		313 36.6	S19 13.5		323 00.5	S20 54.9		Schedar	350 24.8	N 56 19.9			
13	277 57.4	27 35.9	44.0	16 18.0	49.7		328 38.6	13.4		338 02.7	54.9		Shaula	97 15.3	S 37 04.5			
14	292 59.9	42 35.0	44.5	31 18.4	49.8		343 40.5	13.2		353 04.9	54.8		Sirius	259 07.8	S 16 39.8			
15	308 02.4	57 34.1	45.0	46 18.8	49.9		358 42.5	13.1		8 07.1	54.8		Spica	159 12.6	S 10 57.6			
16	323 04.8	72 33.3	45.5	61 19.3	50.0		13 44.4	13.0		23 09.3	54.7		Suhail	223 20.9	S 43 16.5			
17	338 07.3	87 32.4	46.1	76 19.7	50.2		28 46.4	12.8		38 11.5	54.7							
18	353 09.8	102 31.5	S21 46.6	91 20.1	S23 50.3		43 48.3	S19 12.7		53 13.7	S20 54.6		Vega	81 05.8	N 38 45.0			
19	8 12.2	117 30.6	47.1	106 20.6	50.4		58 50.3	12.6		68 15.9	54.6		Zuben'ubi	137 48.9	S 15 52.9			
20	23 14.7	132 29.7	47.6	121 21.0	50.6		73 52.2	12.5		83 18.1	54.5							
21	38 17.1	147 28.9																

G.M.T.	SUN				MOON				Lat.	Twilight		Sun-rise	Moonrise					
	G.H.A.		Dec.		G.H.A.		Dec.			Naut.	Civil		12	13	14	15		
	d	h	m	s	d	h	m	s										
TUESDAY	12 00	181	37.6	S 23 02.7	125	47.8	6.9	S 16 27.6	7.0	59.5	N 72	08 17	10 40	13 47	13 30	13 18	13 08	
	01	196	37.3	02.8	140	13.7	6.9	16 20.6	7.1	59.5	N 70	07 58	09 44	13 15	13 12	13 08	13 05	
	02	211	37.0	03.0	154	39.6	6.9	16 13.5	7.2	59.5	68	07 42	09 10	12 52	12 57	13 00	13 02	
	03	226	36.7	03.2	169	05.5	7.0	16 06.3	7.3	59.5	66	07 29	08 46	12 33	12 45	12 54	13 00	
	04	241	36.4	03.4	183	31.5	7.0	15 59.0	7.5	59.5	64	07 19	08 26	12 18	12 35	12 48	12 58	
	05	256	36.1	03.6	197	57.5	7.1	15 51.5	7.5	59.5	62	07 09	08 11	12 06	12 26	12 43	12 57	
	06	271	35.9	S 23 03.8	212	23.6	7.2	S 15 44.0	7.6	59.5	60	07 01	07 57	11 55	12 19	12 38	12 55	
	07	286	35.6	04.0	226	49.8	7.1	15 36.4	7.7	59.5	N 58	06 54	07 46	11 46	12 12	12 34	12 54	
	08	301	35.3	04.2	241	15.9	7.3	15 28.7	7.8	59.5	56	06 47	07 36	11 38	12 07	12 31	12 53	
	09	316	35.0	04.4	255	42.2	7.3	15 20.9	7.9	59.5	54	06 41	07 27	11 30	12 02	12 28	12 52	
	10	331	34.7	04.6	270	08.5	7.3	15 13.0	8.0	59.5	52	06 35	07 19	11 24	11 57	12 25	12 51	
	11	346	34.4	04.8	284	34.8	7.4	15 05.0	8.1	59.5	50	06 30	07 12	11 18	11 53	12 22	12 50	
	12	1 34.1	S 23 05.0	299	01.2	7.4	S 14 56.9	8.1	59.5	45	06 19	06 56	07 30	11 05	11 43	12 17	12 48	
	13	16 33.8	05.1	313	27.6	7.5	14 48.8	8.3	59.5	N 40	06 09	06 43	07 13	10 55	11 35	12 12	12 47	
	14	31 33.5	05.3	327	54.1	7.6	14 40.5	8.4	59.5	35	05 59	06 31	06 59	10 46	11 29	12 08	12 45	
	15	46 33.2	05.5	342	20.7	7.6	14 32.1	8.4	59.5	30	05 51	06 21	06 47	10 38	11 23	12 05	12 44	
	16	61 32.9	05.7	356	47.3	7.6	14 23.7	8.6	59.5	20	05 35	06 02	06 26	10 24	11 13	11 58	12 42	
	17	76 32.6	05.9	11 13.9	7.7	14 15.1	8.6	59.5	N 10	05 19	05 45	06 07	10 12	11 03	11 53	12 40	12 39	
	18	91 32.3	S 23 06.1	25 40.6	7.8	S 14 06.5	8.7	59.5	S 10	04 43	05 10	05 33	09 49	10 46	11 42	12 37	12 37	
	19	106 32.1	06.2	40 07.4	7.8	13 57.8	8.8	59.5	20	04 21	04 50	05 14	09 36	10 37	11 37	12 35	12 35	
	20	121 31.8	06.4	54 34.2	7.8	13 49.0	8.9	59.5	30	03 52	04 25	04 53	09 22	10 27	11 31	12 33	12 33	
	21	136 31.5	06.6	69 01.0	7.9	13 40.1	9.0	59.5	35	03 34	04 10	04 40	09 14	10 21	11 27	12 32	12 32	
	22	151 31.2	06.8	83 27.9	8.0	13 31.1	9.0	59.5	40	03 11	03 52	04 25	09 05	10 14	11 23	12 31	12 31	
	23	166 30.9	07.0	97 54.9	8.0	13 22.1	9.1	59.5	45	02 41	03 30	04 07	08 54	10 06	11 18	12 29	12 29	
WEDNESDAY	13 00	181	30.6	S 23 07.1	112	21.9	8.1	S 13 13.0	9.2	59.5	S 50	01 56	03 01	03 45	08 41	09 56	11 12	12 28
	01	196	30.3	07.3	126	49.0	8.1	13 03.8	9.3	59.5	52	01 30	02 46	03 34	08 35	09 52	11 10	12 27
	02	211	30.0	07.5	141	16.1	8.1	12 54.5	9.4	59.5	54	00 48	02 29	03 22	08 28	09 47	11 07	12 26
	03	226	29.7	07.7	155	43.2	8.3	12 45.1	9.4	59.5	56	///	02 07	03 08	08 20	09 41	11 03	12 25
	04	241	29.4	07.8	170	10.5	8.2	12 35.7	9.5	59.5	58	///	01 38	02 52	08 12	09 35	11 00	12 24
	05	256	29.1	08.0	184	37.7	8.4	12 26.2	9.6	59.4	S 60	///	00 53	02 32	08 02	09 28	10 56	12 22
	06	271	28.8	S 23 08.2	199	05.1	8.3	S 12 16.6	9.7	59.4	Lat.		Twilight		Moonset			
	07	286	28.5	08.4	213	32.4	8.5	12 06.9	9.7	59.4	Sun-set	Naut.	Civil	12	13	14	15	
	08	301	28.2	08.5	227	59.9	8.4	11 57.2	9.8	59.4	o	h m	h m	h m	h m	h m	h m	h m
	09	316	27.9	08.7	242	27.3	8.6	11 47.4	9.8	59.4	N 72	13 08	15 31	18 56	21 06	23 07	25 03	
	10	331	27.6	08.9	256	54.9	8.5	11 37.6	10.0	59.4	N 70	14 05	15 51	19 26	21 23	23 15	25 03	
	11	346	27.3	09.0	271	22.4	8.7	11 27.6	10.0	59.4	68	14 38	16 06	19 49	21 36	23 21	25 03	
	12	1 27.0	S 23 09.2	285	50.1	8.7	S 11 17.6	10.0	59.4	66	13 26	15 03	16 19	20 06	21 46	23 26	25 03	
	13	16 26.7	09.4	300	17.8	8.7	11 07.6	10.2	59.4	64	14 05	15 22	16 30	20 20	21 55	23 30	25 03	
	14	31 26.5	09.5	314	45.5	8.8	10 57.4	10.1	59.4	62	14 33	15 37	16 39	20 32	22 03	23 33	25 03	
	15	46 26.2	09.7	329	13.3	8.8	10 47.3	10.3	59.4	60	14 54	15 51	16 47	20 42	22 09	23 37	25 03	
	16	61 25.9	09.9	343	41.1	8.9	10 37.0	10.3	59.4	N 58	15 11	16 02	16 54	20 50	22 15	23 39	25 03	
	17	76 25.6	1.00	358	09.0	8.9	10 26.7	10.4	59.4	56	15 25	16 12	17 01	20 58	22 20	23 42	25 03	
	18	91 25.3	S 23 10.2	12 36.9	9.0	S 10 16.3	10.4	59.4	54	15 38	16 21	17 07	21 05	22 24	23 44	25 03	25 03	
	19	106 25.0	1.04	27 04.9	9.0	10 05.9	10.5	59.3	52	15 48	16 29	17 13	21 11	22 29	23 46	25 03	25 03	
	20	121 24.7	1.05	41 32.9	9.1	9 55.4	10.5	59.3	50	15 58	16 37	17 18	21 16	22 32	23 48	25 03	25 03	
	21	136 24.4	1.07	56 01.0	9.1	9 44.9	10.6	59.3	45	16 19	16 52	17 29	21 28	22 40	23 52	25 03	25 03	
	22	151 24.1	1.08	70 29.1	9.2	9 34.3	10.6	59.3	N 40	16 35	17 06	17 40	21 38	22 47	23 55	25 03	25 03	
	23	166 23.8	1.10	84 57.3	9.2	9 23.7	10.7	59.3	35	16 49	17 17	17 49	21 46	22 52	23 58	25 03	25 03	
THURSDAY	14 00	181	23.5	S 23 11.2	99	25.5	9.2	S 9 13.0	10.8	59.3	30	17 01	17 28	17 58	21 53	22 57	24 01	00 01
	01	196	23.2	11.3	113	53.7	9.3	9 02.2	10.8	59.3	20	17 22	17 47	18 14	22 06	23 06	24 05	00 05
	02	211	22.9	11.5	128	22.0	9.4	8 51.4	10.8	59.3	N 10	17 41	18 03	18 30	22 16	23 13	24 09	00 09
	03	226	22.6	11.6	142	50.4	9.4	8 40.6	10.9	59.3	0	17 58	18 20	18 47	22 26	23 20	24 12	00 12
	04	241	22.3	11.8	157	18.8	9.4	8 29.7	10.9	59.3	S 10	18 15	18 38	19 05	22 37	23 27	24 16	00 16
	05	256	22.0	11.9	171	47.2	9.5	8 18.8	11.0	59.3	20	18 34	18 59	19 28	22 47	23 35	24 19	00 19
	06	271	21.7	S 23 12.1	186	15.7	9.5	S 8 07.8	11.0	59.3	30	18 56	19 23	19 56	22 59	23 43	24 23	00 23
	07	286	21.4	12.2	200	44.2	9.6	7 56.8	11.1	59.2	35	19 09	19 38	20 15	23 06	23 47	24 25	00 25
	08	301	21.1	12.4	215	12.8	9.6	7 45.7	11.1	59.2	40	19 24	19 56	20 38	23 14	23 53	24 28	00 28
	09	316	20.8	12.5	229	41.4	9.6	7 34.6	11.2	59.2	45	19 41	20 19	21 08	23 23	23 59	24 31	00 31
	10	331	20.5	12.7	244	10.0	9.7	7 23.4	11.1	59.2	S 50	20 04	20 48	21 53	23 34	24 06	00 06	00 35
	11	346	20.2	12.8	258	38.7	9.8	7 12.3	11.3	59.2	52	20 14	21 03	22 19	23 39	24 09	00 09	00 36
	12	1 19.9	S 23 13.0	273	07.5	9.7	S 7 01.0	11.2	59.2	54	20 26	21 20	23 02	23 44	24 13	00 13	00 38	
	13	16 19.6	13.1	287	36.2	9.8	6 49.8	11.3	59.2	56	20 40	21 42	///	23 51	24 17	00 17	00 40	
	14	31 19.3	13.3	302	05.0	9.9	6 38.5	11.3	59.2	58	20 57	22 11	///	23 58	24 21	00 21	00 42	
	15	46 19.0	13.4	316	33.9	9.9	6 27.2	11.4	59.2	S 60	21 17	22 57	///	24 05	00 05	00 27	00 45	
	16	61 18.7	13.6	331	02.8	9.9	6 15.8	11.4	59.1	Day		SUN		Mer. Pass.		MOON		
	17	76 18.4	13.7	345	31.7	9.9	6 04.4	11.4	59.1	Eqn. of Time	Mer. Pass.	Mer. Upper	Pass. Lower	Age	Phase			
	18	91 18.1	S 23 13.9	0 00.6	10.0	S 5 53.0	11.4	59.1	00h	12h	h m	h m	h m	h m	h m	h m	h m	
	19	106 17.8	14.0	14 29.6	10.0	5 41.6	11.5	59.1	m s	06 31	06 17	11 54	16 13	03 45	05			
	20																	

G.M.T.	ARIES			VENUS -3.4			MARS +1.5			JUPITER -1.6			SATURN +0.8			STARS		
	G.H.A.	G.H.A.	Dec.	G.H.A.	G.H.A.	Dec.	G.H.A.	G.H.A.	Dec.	G.H.A.	G.H.A.	Dec.	G.H.A.	G.H.A.	Dec.	Name	S.H.A.	Dec.
15	d	h	m	d	h	m	d	h	m	d	h	m	d	h	m			
00	83	24.5	192 26.2	S21	49.6		181 22.8	S23	51.1	134 00.0	S19	12.0	143 26.8	S20	54.3	Acamar	315 47.6	S 40 27.7
01	98	27.0	207 25.4		50.1		196 23.2		51.2	149 01.9		11.8	158 29.0		54.3	Achernar	335 55.5	S 57 26.1
02	113	29.5	222 24.5		50.6		211 23.6		51.3	164 03.9		11.7	173 31.2		54.2	Acrux	173 53.0	S 62 52.9
03	128	31.9	237 23.6		51.1		226 24.1		51.4	179 05.8		11.6	188 33.4		54.2	Adhara	255 42.8	S 28 55.2
04	143	34.4	252 22.7		51.6		241 24.5		51.6	194 07.8		11.4	203 35.6		54.1	Aldebaran	291 33.8	N 16 25.9
05	158	36.9	267 21.8		52.1		256 24.9		51.7	209 09.7		11.3	218 37.8		54.1			
06	173	39.3	282 20.9	S21	52.6		271 25.4	S23	51.8	224 11.6	S19	11.2	233 40.0	S20	54.0	Alioth	166 55.1	N 56 09.8
07	188	41.8	297 20.1		53.1		286 25.8		51.9	239 13.6		11.1	248 42.2		54.0	Alkaid	153 29.9	N 49 30.1
08	203	44.3	312 19.2		53.6		301 26.2		52.0	254 15.5		10.9	263 44.3		53.9	Al Na'ir	28 32.9	S 47 09.0
09	218	46.7	327 18.3		54.1		316 26.7		52.2	269 17.5		10.8	278 46.5		53.9	Alnilam	276 25.6	S 1 13.6
10	233	49.2	342 17.4		54.6		331 27.1		52.3	284 19.4		10.7	293 48.7		53.8	Alphard	218 34.2	S 8 29.5
11	248	51.6	357 16.5		55.1		346 27.5		52.4	299 21.4		10.5	308 50.9		53.8			
12	263	54.1	12 15.6	S21	55.6		1 28.0	S23	52.5	314 23.3	S19	10.4	323 53.1	S20	53.7	Alphecca	126 44.4	N 26 50.6
13	278	56.6	27 14.8		56.1		16 28.4		52.6	329 25.3		10.3	338 55.3		53.7	Alpheratz	358 23.8	N 28 52.9
14	293	59.0	42 13.9		56.6		31 28.8		52.8	344 27.2		10.2	353 57.5		53.6	Altair	62 46.6	N 8 46.1
15	309	01.5	57 13.0		57.1		46 29.3		52.9	359 29.1		10.0	8 59.7		53.6	Ankaa	353 54.1	S 42 31.0
16	324	04.0	72 12.1		57.6		61 29.7		53.0	14 31.1		09.9	24 01.9		53.5	Antares	113 14.5	S 26 20.7
17	339	06.4	87 11.2		58.1		76 30.1		53.1	29 33.0		09.8	39 04.0		53.5			
18	354	08.9	102 10.3	S21	58.5		91 30.6	S23	53.2	44 35.0	S19	09.7	54 06.2	S20	53.4	Arcturus	146 31.6	N 19 22.9
19	9	11.4	117 09.4		59.0		106 31.0		53.4	59 36.9		09.5	69 08.4		53.4	Atria	108 51.9	S 68 57.4
20	24	13.8	132 08.5		59.5		121 31.4		53.5	74 38.8		09.4	84 10.6		53.3	Avior	234 33.4	S 59 23.0
21	39	16.3	147 07.7		60.0		136 31.9		53.6	89 40.8		09.3	99 12.8		53.3	Bellatrix	279 13.5	N 6 18.9
22	54	18.7	162 06.8		60.5		151 32.3		53.7	104 42.7		09.1	114 15.0		53.2	Betelgeuse	271 43.2	N 7 24.0
23	69	21.2	177 05.9		61.0		166 32.7		53.8	119 44.7		09.0	129 17.2		53.2			
16	d	h	m	d	h	m	d	h	m	d	h	m	d	h	m			
00	84	23.7	192 05.0	S22	01.4		181 33.2	S23	53.9	134 46.6	S19	08.9	144 19.4	S20	53.1	Canopus	264 12.9	S 52 40.5
01	99	26.1	207 04.1		01.9		196 33.6		54.0	149 48.6		08.7	159 21.6		53.1	Capella	281 31.6	N 45 57.6
02	114	28.6	222 03.2		02.4		211 34.0		54.2	164 50.5		08.6	174 23.7		53.0	Deneb	49 58.4	N 45 08.8
03	129	31.1	237 02.3		02.9		226 34.4		54.3	179 52.4		08.5	189 25.9		53.0	Denebola	183 13.4	N 14 47.1
04	144	33.5	252 01.4		03.3		241 34.9		54.4	194 54.4		08.4	204 28.1		52.9	Diphda	349 34.9	S 18 11.9
05	159	36.0	267 00.5		03.8		256 35.3		54.5	209 56.3		08.2	219 30.3		52.9			
06	174	38.5	281 59.6	S22	04.3		271 35.7	S23	54.6	224 58.3	S19	08.1	234 32.5	S20	52.8	Dubhe	194 39.4	N 61 57.2
07	189	40.9	296 58.7		04.8		286 36.2		54.7	240 00.2		08.0	249 34.7		52.8	Elnath	279 01.5	N 28 34.5
08	204	43.4	311 57.9		05.2		301 36.6		54.8	255 02.1		07.8	264 36.9		52.7	Eltanin	91 04.8	N 51 29.7
09	219	45.9	326 57.0		05.7		316 37.0		54.9	270 04.1		07.7	279 39.1		52.7	Enif	34 25.6	N 9 42.1
10	234	48.3	341 56.1		06.2		331 37.5		55.1	285 06.0		07.6	294 41.2		52.6	Fomalhaut	16 07.0	S 29 49.6
11	249	50.8	356 55.2		06.6		346 37.9		55.2	300 08.0		07.5	309 43.4		52.6			
12	264	53.2	11 54.3	S22	07.1		1 38.3	S23	55.3	315 09.9	S19	07.3	324 45.6	S20	52.5	Gacrux	172 44.5	S 56 53.6
13	279	55.7	26 53.4		07.6		16 38.7		55.4	330 11.8		07.2	339 47.8		52.5	Gienah	176 32.5	S 17 19.6
14	294	58.2	41 52.5		08.0		31 39.2		55.5	345 13.8		07.1	354 50.0		52.4	Hadar	149 43.7	S 60 11.0
15	310	00.6	56 51.6		08.5		46 39.6		55.6	0 15.7		06.9	9 52.2		52.4	Hamal	328 44.6	N 23 17.0
16	325	03.1	71 50.7		08.9		61 40.0		55.7	15 17.7		06.8	24 54.4		52.3	Kaus Aust.	84 35.9	S 34 24.2
17	340	05.6	86 49.8		09.4		76 40.5		55.8	30 19.6		06.7	39 56.5		52.3			
18	355	08.0	101 48.9	S22	09.9		91 40.9	S23	55.9	45 21.5	S19	06.5	54 58.7	S20	52.2	Kochab	137 19.3	N 74 18.6
19	10	10.5	116 48.0		10.3		106 41.3		56.0	60 23.5		06.4	70 00.9		52.2	Markab	14 17.2	N 15 00.1
20	25	13.0	131 47.1		10.8		121 41.7		56.1	75 25.4		06.3	85 03.1		52.1	Menkar	314 55.6	N 3 56.4
21	40	15.4	146 46.2		11.2		136 42.2		56.2	90 27.4		06.2	100 05.3		52.1	Menkent	148 53.8	S 36 10.7
22	55	17.9	161 45.3		11.7		151 42.6		56.3	105 29.3		06.0	115 07.5		52.0	Miaplacidus	221 47.3	S 69 33.4
23	70	20.3	176 44.4		12.1		166 43.0		56.5	120 31.2		05.9	130 09.7		52.0			
17	d	h	m	d	h	m	d	h	m	d	h	m	d	h	m			
00	85	22.8	191 43.5	S22	12.6		181 43.5	S23	56.6	135 33.2	S19	05.8	145 11.9	S20	51.9	Mirfak	309 35.8	N 49 43.7
01	100	25.3	206 42.6		13.0		196 43.9		56.7	150 35.1		05.6	160 14.0		51.9	Nunki	76 47.0	S 26 20.7
02	115	27.7	221 41.7		13.5		211 44.3		56.8	165 37.1		05.5	175 16.2		51.8	Peacock	54 21.1	S 56 51.6
03	130	30.2	236 40.8		13.9		226 44.7		56.9	180 39.0		05.4	190 18.4		51.8	Pollux	244 15.1	N 28 07.0
04	145	32.7	251 39.9		14.4		241 45.2		57.0	195 40.9		05.2	205 20.6		51.7	Procyon	245 40.3	N 5 19.3
05	160	35.1	266 39.0		14.8		256 45.6		57.1	210 42.9		05.1	220 22.8		51.7			
06	175	37.6	281 38.1	S22	15.3		271 46.0	S23	57.2	225 44.8	S19	05.0	235 25.0	S20	51.6	Rasalhague	96 43.0	N 12 35.3
07	190	40.1	296 37.2		15.7		286 46.5		57.3	240 46.7		04.9	250 27.1		51.6	Regulus	208 24.9	N 12 09.2
08	205	42.5	311 36.3		16.2		301 46.9		57.4	255 48.7		04.7	265 29.3		51.5	Rigel	281 49.2	S 8 14.8
09	220	45.0	326 35.4		16.6		316 47.3		57.5	270 50.6		04.6	280 31.5		51.5	Rigel Kent.	140 45.5	S 60 40.3
10	235	47.5	341 34.5		17.0		331 47.7		57.6	285 52.6		04.5	295 33.7		51.4	Sabik	102 57.6	S 15 40.6
11	250	49.9	356 33.6		17.5		346 48.2		57.7	300 54.5		04.3	310 35.9		51.4			
12	265	52.4	11 32.7	S22	17.9		1 48.6	S23	57.8	315 56.4	S19	04.2	325 38.1	S20	51.3	Schedar	350 24.8	N 56 19.9
13	280	54.8	26 31.8		18.4		16 49.0		57.9	330 58.4		04.1	340 40.3		51.3	Shaula	97 15.3	S 37 04.5
14	295	57.3	41 30.9		18.8		31 49.4		58.0	346 00.3		03.9	355 42.4		51.2	Sirius	259 07.8	S 16 39.8
15	310	59.8	56 30.0		19.2		46 49.9		58.1	1 02.2		03.8	10 44.6		51.2	Spica	159 12.5	S 10 57.6
16	326	02.2	71 29.1		19.7		61 50.3		58.2	16 04.2		03.7	25 46.8		51.1	Suhail	223 20.8	S 43 16.5
17	341	04.7	86 28.2		20.1		76 50.7		58.3	31 06.1		03.5	40 49.0		51.1			
18	356	07.2	101 27.3	S22	20.5		91 51.1	S23	58.4	46 08.0	S19	03.4	55 51.2	S20	51.0	Vega	81 05.8	N 38 45.0
19	11	09.6	116 26.4		20.9		106 51.6		58.4	61 10.0		03.3	70 53.4		5			

G.M.T.		SUN				MOON				Lat.	Twilight		Sun-rise	Moonrise									
		G.H.A.		Dec.		G.H.A.		v			Naut.			Civil		15		16		17		18	
d	h	°	'	°	'	°	'	°	'	°	'	h	m	h	m	h	m	h	m	h	m	h	m
15	00	181	16.3	S23	14.7	86	55.1	10.2	S	4	44.0	11.6	59.1	N 72	08 21	10 49	■	13 08	12 58	12 48	12 37		
	01	196	16.0		14.9	101	24.3	10.2		4	32.4	11.7	59.0	N 70	08 01	09 49	■	13 05	13 01	12 58	12 55		
	02	211	15.7		15.0	115	53.5	10.2		4	20.7	11.6	59.0	68	07 46	09 14	■	13 02	13 04	13 06	13 09		
	03	226	15.4		15.1	130	22.7	10.3		4	09.1	11.6	59.0	66	07 33	08 49	10 29	13 00	13 06	13 13	13 20		
	04	241	15.1		15.3	144	52.0	10.3		3	57.5	11.7	59.0	64	07 22	08 30	09 47	12 58	13 08	13 18	13 30		
	05	256	14.8		15.4	159	21.3	10.4		3	45.8	11.7	59.0	62	07 12	08 14	09 19	12 57	13 10	13 23	13 39		
	06	271	14.5	S23	15.5	173	50.7	10.3	S	3	34.1	11.7	59.0	60	07 04	08 00	08 58	12 55	13 11	13 28	13 46		
	07	286	14.2		15.7	188	20.0	10.4		3	22.4	11.7	59.0	N 58	06 56	07 49	08 41	12 54	13 12	13 31	13 52		
	08	301	13.9		15.8	202	49.4	10.4		3	10.7	11.8	59.0	56	06 50	07 39	08 26	12 53	13 14	13 35	13 58		
	09	316	13.6		15.9	217	18.8	10.5		2	58.9	11.7	58.9	54	06 44	07 30	08 13	12 52	13 15	13 38	14 01		
	10	331	13.3		16.1	231	48.3	10.4		2	47.2	11.8	58.9	52	06 38	07 22	08 02	12 51	13 16	13 41	14 08		
	11	346	13.0		16.2	246	17.7	10.5		2	35.4	11.7	58.9	50	06 33	07 14	07 52	12 50	13 16	13 43	14 12		
	12	1	12.7	S23	16.3	260	47.2	10.6	S	2	23.7	11.8	58.9	45	06 21	06 58	07 32	12 48	13 18	13 49	14 21		
	13	16	12.4		16.4	275	16.8	10.5		2	11.9	11.8	58.9	N 40	06 11	06 45	07 15	12 47	13 20	13 54	14 29		
	14	31	12.1		16.6	289	46.3	10.5		2	00.1	11.7	58.9	35	06 01	06 33	07 01	12 45	13 21	13 58	14 36		
	15	46	11.8		16.7	304	15.8	10.6		1	48.4	11.8	58.9	30	05 53	06 22	06 49	12 44	13 23	14 01	14 41		
	16	61	11.5		16.8	318	45.4	10.6		1	36.6	11.8	58.9	20	05 36	06 04	06 28	12 42	13 25	14 08	14 52		
	17	76	11.2		17.0	333	15.0	10.6		1	24.8	11.8	58.8	N 10	05 20	05 46	06 09	12 40	13 27	14 13	15 01		
	18	91	10.9	S23	17.1	347	44.6	10.7	S	1	13.0	11.8	58.8	0	05 03	05 29	05 52	12 39	13 29	14 19	15 09		
	19	106	10.6		17.2	2	14.3	10.6		1	01.2	11.8	58.8	S 10	04 44	05 11	05 34	12 37	13 31	14 24	15 18		
	20	121	10.3		17.3	16	43.9	10.7		0	49.4	11.8	58.8	20	04 22	04 51	05 16	12 35	13 33	14 30	15 27		
	21	136	10.0		17.4	31	13.6	10.7		0	37.6	11.8	58.8	30	03 53	04 26	04 54	12 33	13 35	14 37	15 37		
	22	151	09.7		17.6	45	43.3	10.7		0	25.8	11.8	58.8	35	03 34	04 11	04 41	12 32	13 37	14 40	15 43		
	23	166	09.4		17.7	60	13.0	10.7		0	14.0	11.8	58.8	40	03 11	03 53	04 26	12 31	13 38	14 45	15 50		
														45	02 41	03 30	04 08	12 29	13 40	14 50	15 58		
16	00	181	09.1	S23	17.8	74	42.7	10.7	S	0	02.2	11.8	58.8	S 50	01 56	03 01	03 45	12 28	13 42	14 56	16 08		
	01	196	08.8		17.9	89	12.4	10.8	N	0	09.6	11.8	58.7	52	01 28	02 46	03 35	12 27	13 43	14 59	16 13		
	02	211	08.5		18.0	103	42.2	10.7		0	21.4	11.7	58.7	54	00 44	02 28	03 22	12 26	13 44	15 02	16 18		
	03	226	08.2		18.2	118	11.9	10.8		0	33.1	11.8	58.7	56	///	02 06	03 08	12 25	13 46	15 05	16 23		
	04	241	07.9		18.3	132	41.7	10.8		0	44.9	11.8	58.7	58	///	01 37	02 52	12 24	13 47	15 09	16 30		
	05	256	07.6		18.4	147	11.5	10.8		0	56.7	11.7	58.7	S 60	///	00 48	02 31	12 22	13 49	15 13	16 37		
	06	271	07.3	S23	18.5	161	41.3	10.8	N	1	08.4	11.7	58.7										
	07	286	07.0		18.6	176	11.1	10.8		1	20.1	11.8	58.7	Lat.	Sun-set	Twilight	Moonset						
	08	301	06.7		18.7	190	40.9	10.8		1	31.9	11.7	58.6	Civil	Naut.	15	16	17	18				
	09	316	06.4		18.8	205	10.7	10.9		1	43.6	11.7	58.6	o	h	m	h	m	h	m	h	m	
	10	331	06.1		19.0	219	40.6	10.8		1	55.3	11.6	58.6	N 72	13 02	15 30	25 03	01 03	02 58	04 54			
	11	346	05.8		19.1	234	10.4	10.8		2	06.9	11.7	58.6	N 70	14 02	15 50	25 03	01 03	02 51	04 38			
	12	1	05.5	S23	19.2	248	40.2	10.9	N	2	18.6	11.7	58.6	68	14 37	16 05	25 03	01 03	02 45	04 25			
	13	16	05.1		19.3	263	10.1	10.8		2	30.3	11.6	58.6	66	13 22	15 02	16 18	25 03	01 03	02 40	04 15		
	14	31	04.8		19.4	277	39.9	10.9		2	41.9	11.6	58.6	64	14 04	15 21	16 29	25 03	01 03	02 35	04 07		
	15	46	04.5		19.5	292	09.8	10.9		2	53.5	11.6	58.5	62	14 32	15 37	16 39	25 03	01 03	02 32	03 59		
	16	61	04.2		19.6	306	39.7	10.8		3	05.1	11.5	58.5	60	14 53	15 51	16 47	25 03	01 03	02 29	03 53		
	17	76	03.9		19.7	321	09.5	10.9		3	16.6	11.6	58.5	N 58	15 10	16 02	16 55	25 03	01 03	02 26	03 47		
	18	91	03.6	S23	19.8	335	39.4	10.9	N	3	28.2	11.5	58.5	56	15 25	16 12	17 02	25 03	01 03	02 23	03 42		
	19	106	03.3		19.9	350	09.3	10.8		3	39.7	11.5	58.5	54	15 38	16 21	17 08	25 03	01 03	02 21	03 38		
	20	121	03.0		20.0	4	39.1	10.9		3	51.2	11.5	58.5	52	15 49	16 30	17 13	25 03	01 03	02 19	03 34		
	21	136	02.7		20.1	19	09.0	10.9		4	02.7	11.4	58.4	50	15 59	16 37	17 19	25 03	01 03	02 17	03 30		
	22	151	02.4		20.2	33	38.9	10.8		4	14.1	11.4	58.4	45	16 19	16 53	17 30	25 03	01 03	02 13	03 22		
	23	166	02.1		20.3	48	08.7	10.9		4	25.5	11.4	58.4	N 40	16 36	17 07	17 41	25 03	01 03	02 10	03 16		
17	00	181	01.8	S23	20.4	62	38.6	10.9	N	4	36.9	11.3	58.4	35	16 50	17 18	17 50	25 03	01 03	02 07	03 10		
	01	196	01.5		20.5	77	08.5	10.8		4	48.2	11.4	58.4	30	17 02	17 29	17 59	00 01	01 03	02 05	03 06		
	02	211	01.2		20.6	91	38.3	10.9		4	59.6	11.3	58.4	20	17 24	17 48	18 15	00 05	01 03	02 00	02 57		
	03	226	00.9		20.7	106	08.2	10.8		5	10.9	11.2	58.4	N 10	17 42	18 05	18 31	00 09	01 03	01 56	02 50		
	04	241	00.6		20.8	120	38.0	10.9		5	22.1	11.2	58.3	0	17 59	18 22	18 48	00 12	01 03	01 53	02 43		
	05	256	00.3		20.9	135	07.9	10.8		5	33.3	11.2	58.3	S 10	18 17	18 40	19 07	00 16	01 03	01 49	02 36		
	06	271	00.0	S23	21.0	149	37.7	10.9	N	5	44.5	11.2	58.3	20	18 36	19 00	19 30	00 19	01 02	01 45	02 28		
	07	286	59.7		21.1	164	07.6	10.8		5	55.7	11.1	58.3	30	18 58	19 25	19 59	00 23	01 02	01 41	02 20		
	08	300	59.4		21.2	178	37.4	10.8		6	06.8	11.1	58.3	35	19 11	19 40	20 17	00 25	01 02	01 38	02 15		
	09	315	59.1		21.3	193	07.2	10.8		6	17.9	11.0	58.3	40	19 26	19 59	20 40	00 28	01 02	01 35	02 10		
	10	330	58.8		21.4	207	37.0	10.9		6	28.9	11.0	58.2	45	19 44	20 21	21 11	00 31	01 02	01 32	02 03		
	11	345	58.5		21.5	222	06.9	10.8		6	39.9	11.0	58.2	S 50	20 06	20 51	21 56	00 35	01 02	01 28	01 56		
	12	0	58.1	S23	21.6	236	36.7	10.8	N	6	50.9	10.9	58.2	52	20 17	21 06	22 24	00 36	01 01	01 26	01 52		
	13	15	57.8																				

		ARIES		VENUS -3.4		MARS +1.5		JUPITER -1.6		SATURN +0.8		STARS			
G.M.T.		G.H.A.	G.H.A.	Dec.	G.H.A.	Dec.	G.H.A.	Dec.	G.H.A.	Dec.	G.H.A.	Dec.	Name	S.H.A.	Dec.
MONDAY	18 00	86 22.0	191 21.8	S22 23.1	181 53.7	S23 58.9	136 19.7	S19 02.6	146 04.3	S20 50.7			Acamar	315 47.6	S 40 27.7
	01	101 24.4	206 20.9	23.5	196 54.1	59.0	151 21.6	02.5	161 06.5	50.7			Achernar	335 55.5	S 57 26.1
	02	116 26.9	221 20.0	23.9	211 54.5	59.1	166 23.5	02.4	176 08.7	50.6			Acrux	173 53.0	S 62 52.9
	03	131 29.3	236 19.1	.. 24.3	226 55.0	.. 59.2	181 25.5	.. 02.2	191 10.8	.. 50.5			Adhara	255 42.8	S 28 55.2
	04	146 31.8	251 18.2	24.8	241 55.4	59.3	196 27.4	02.1	206 13.0	50.5			Aldebaran	291 33.8	N 16 25.9
	05	161 34.3	266 17.3	25.2	256 55.8	59.4	211 29.3	02.0	221 15.2	50.4					
	06	176 36.7	281 16.4	S22 25.6	271 56.2	S23 59.5	226 31.3	S19 01.8	236 17.4	S20 50.4			Alioth	166 55.1	N 56 09.8
	07	191 39.2	296 15.5	26.0	286 56.7	59.6	241 33.2	01.7	251 19.6	50.3			Alkaid	153 29.9	N 49 30.1
	08	206 41.7	311 14.6	26.4	301 57.1	59.7	256 35.1	01.6	266 21.8	50.3			Al Na'ir	28 32.9	S 47 09.9
	09	221 44.1	326 13.7	.. 26.8	316 57.5	.. 59.7	271 37.1	.. 01.4	281 23.9	.. 50.2			Alnilam	276 25.6	S 1 13.6
	10	236 46.6	341 12.8	27.3	331 57.9	59.8	286 39.0	01.3	296 26.1	50.2			Alphard	218 34.2	S 8 29.5
	11	251 49.1	356 11.8	27.7	346 58.4	23 59.9	301 40.9	01.2	311 28.3	50.1					
	12	266 51.5	11 10.9	S22 28.1	1 58.8	S24 00.0	316 42.9	S19 01.0	326 30.5	S20 50.1			Alphecca	126 44.4	N 26 50.6
	13	281 54.0	26 10.0	28.5	16 59.2	00.1	331 44.8	00.9	341 32.7	50.0			Alpheratz	358 23.8	N 28 52.9
	14	296 56.5	41 09.1	28.9	31 59.6	00.2	346 46.7	00.8	356 34.9	50.0			Altair	62 46.6	N 8 46.1
	15	311 58.9	56 08.2	.. 29.3	47 00.0	.. 00.3	1 48.7	.. 00.6	11 37.0	.. 49.9			Ankaa	353 54.1	S 42 31.0
	16	327 01.4	71 07.3	29.7	62 00.5	00.4	16 50.6	00.5	26 39.2	49.9			Antares	113 14.5	S 26 20.7
	17	342 03.8	86 06.4	30.1	77 00.9	00.4	31 52.6	00.4	41 41.4	49.8					
	18	357 06.3	101 05.5	S22 30.5	92 01.3	S24 00.5	46 54.5	S19 00.2	56 43.6	S20 49.8			Arcturus	146 31.5	N 19 22.8
	19	12 08.8	116 04.5	30.9	107 01.7	00.6	61 56.4	00.1	71 45.8	49.7			Atria	108 51.9	S 68 57.4
	20	27 11.2	131 03.6	31.3	122 02.2	00.7	76 58.4	19 00.0	86 48.0	49.7			Avior	234 33.4	S 59 23.1
	21	42 13.7	146 02.7	.. 31.7	137 02.6	.. 00.8	92 00.3	18 59.8	101 50.1	.. 49.6			Bellatrix	279 13.5	N 6 18.9
	22	57 16.2	161 01.8	32.1	152 03.0	00.9	107 02.2	59.7	116 52.3	49.6			Betelgeuse	271 43.2	N 7 24.0
23	72 18.6	176 00.9	32.5	167 03.4	01.0	122 04.2	59.6	131 54.5	49.5						
TUESDAY	19 00	87 21.1	191 00.0	S22 32.9	182 03.8	S24 01.0	137 06.1	S18 59.4	146 56.7	S20 49.5			Canopus	264 12.9	S 52 40.5
	01	102 23.6	205 59.1	33.3	197 04.3	01.1	152 08.0	59.3	161 58.9	49.4			Capella	281 31.6	N 45 57.6
	02	117 26.0	220 58.1	33.7	212 04.7	01.2	167 10.0	59.2	177 01.1	49.4			Deneb	49 58.4	N 45 08.8
	03	132 28.5	235 57.2	.. 34.1	227 05.1	.. 01.3	182 11.9	.. 59.0	192 03.2	.. 49.3			Denebola	183 13.4	N 14 47.1
	04	147 30.9	250 56.3	34.5	242 05.5	01.4	197 13.8	58.9	207 05.4	49.3			Diphda	349 34.9	S 18 11.9
	05	162 33.4	265 55.4	34.9	257 05.9	01.4	212 15.7	58.8	222 07.6	49.2					
	06	177 35.9	280 54.5	S22 35.2	272 06.4	S24 01.5	227 17.7	S18 58.6	237 09.8	S20 49.2			Dubhe	194 39.4	N 61 57.1
	07	192 38.3	295 53.6	35.6	287 06.8	01.6	242 19.6	58.5	252 12.0	49.1			Elnath	279 01.5	N 28 34.5
	08	207 40.8	310 52.6	36.0	302 07.2	01.7	257 21.5	58.4	267 14.2	49.1			Eltanin	91 04.8	N 51 29.7
	09	222 43.3	325 51.7	.. 36.4	317 07.6	.. 01.8	272 23.5	.. 58.2	282 16.3	.. 49.0			Enif	34 25.6	N 9 42.2
	10	237 45.7	340 50.8	36.8	332 08.0	01.8	287 25.4	58.1	297 18.5	49.0			Fomalhaut	16 07.1	S 29 49.6
	11	252 48.2	355 49.9	37.2	347 08.5	01.9	302 27.3	58.0	312 20.7	48.9					
	12	267 50.7	10 49.0	S22 37.6	2 08.9	S24 02.0	317 29.3	S18 57.8	327 22.9	S20 48.9			Gacrux	172 44.4	S 56 53.6
	13	282 53.1	25 48.0	37.9	17 09.3	02.1	332 31.2	57.7	342 25.1	48.8			Gienah	176 32.5	S 17 19.6
	14	297 55.6	40 47.1	38.3	32 09.7	02.2	347 33.1	57.6	357 27.2	48.7			Hadar	149 43.6	S 60 11.1
	15	312 58.1	55 46.2	.. 38.7	47 10.1	.. 02.2	2 35.1	.. 57.4	12 29.4	.. 48.7			Hamal	328 44.6	N 23 17.0
	16	328 00.5	70 45.3	39.1	62 10.6	02.3	17 37.0	57.3	27 31.6	48.6			Kaus Aust.	84 35.9	S 34 24.2
	17	343 03.0	85 44.4	39.4	77 11.0	02.4	32 38.9	57.2	42 33.8	48.6					
	18	358 05.4	100 43.4	S22 39.8	92 11.4	S24 02.5	47 40.9	S18 57.0	57 36.0	S20 48.5			Kochab	137 19.3	N 74 18.6
	19	13 07.9	115 42.5	40.2	107 11.8	02.5	62 42.8	56.9	72 38.1	48.5			Markab	14 17.2	N 15 00.1
	20	28 10.4	130 41.6	40.6	122 12.2	02.6	77 44.7	56.8	87 40.3	48.4			Menkar	314 55.6	N 3 56.4
	21	43 12.8	145 40.7	.. 40.9	137 12.7	.. 02.7	92 46.7	.. 56.6	102 42.5	.. 48.4			Menkent	148 53.8	S 36 10.7
	22	58 15.3	160 39.7	41.3	152 13.1	02.7	107 48.6	56.5	117 44.7	48.3			Miaplacidus	221 47.3	S 69 33.4
23	73 17.8	175 38.8	41.7	167 13.5	02.8	122 50.5	56.4	132 46.9	48.3						
WEDNESDAY	20 00	88 20.2	190 37.9	S22 42.0	182 13.9	S24 02.9	137 52.4	S18 56.2	147 49.1	S20 48.2			Mirfak	309 35.8	N 49 43.7
	01	103 22.7	205 37.0	42.4	197 14.3	03.0	152 54.4	56.1	162 51.2	48.2			Nunki	76 47.0	S 26 20.7
	02	118 25.2	220 36.1	42.8	212 14.8	03.0	167 56.3	56.0	177 53.4	48.1			Peacock	54 21.1	S 56 51.6
	03	133 27.6	235 35.1	.. 43.1	227 15.2	.. 03.1	182 58.2	.. 55.8	192 55.6	.. 48.1			Pollux	244 15.1	N 28 07.0
	04	148 30.1	250 34.2	43.5	242 15.6	03.2	198 00.2	55.7	207 57.8	48.0			Procyon	245 40.2	N 5 19.3
	05	163 32.6	265 33.3	43.9	257 16.0	03.2	213 02.1	55.6	223 00.0	48.0					
	06	178 35.0	280 32.4	S22 44.2	272 16.4	S24 03.3	228 04.0	S18 55.4	238 02.1	S20 47.9			Rasalhague	96 43.0	N 12 35.3
	07	193 37.5	295 31.4	44.6	287 16.8	03.4	243 06.0	55.3	253 04.3	47.9			Regulus	208 24.8	N 12 09.2
	08	208 39.9	310 30.5	44.9	302 17.3	03.5	258 07.9	55.2	268 06.5	47.8			Rigel	281 49.2	S 8 14.8
	09	223 42.4	325 29.6	.. 45.3	317 17.7	.. 03.5	273 09.8	.. 55.0	283 08.7	.. 47.8			Rigel Kent.	140 45.5	S 60 40.3
	10	238 44.9	340 28.7	45.7	332 18.1	03.6	288 11.7	54.9	298 10.9	47.7			Sabik	102 57.6	S 15 40.6
	11	253 47.3	355 27.7	46.0	347 18.5	03.7	303 13.7	54.8	313 13.0	47.7					
	12	268 49.8	10 26.8	S22 46.4	2 18.9	S24 03.7	318 15.6	S18 54.6	328 15.2	S20 47.6			Schedar	350 24.8	N 56 19.9
	13	283 52.3	25 25.9	46.7	17 19.3	03.8	333 17.5	54.5	343 17.4	47.5			Shaula	97 15.3	S 37 04.5
	14	298 54.7	40 24.9	47.1	32 19.8	03.9	348 19.5	54.4	358 19.6	47.5			Sirius	259 07.8	S 16 39.8
	15	313 57.2	55 24.0	.. 47.4	47 20.2	.. 03.9	3 21.4	.. 54.2	13 21.8	.. 47.4			Spica	159 12.5	S 10 57.6
	16	328 59.7	70 23.1	47.8	62 20.6	04.0	18 23.3	54.1	28 23.9	47.4			Suhail	223 20.8	S 43 16.5
	17	344 02.1	85 22.2	48.1	77 21.0	04.1	33 25.2	53.9	43 26.1	47.3					
	18	359 04.6	100 21.2	S22 48.5	92 21.4	S24 04.1	48 27.2	S18 53.8	58 28.3	S20 47.3			Vega	81 05.8	N 38 45.0
	19	14 07.1	115 20.3	48.8	107 21.8	04.2	63 29.1	53.7	73 30.5	47.2			Zuben'ubi	137 48.9	S 15 52.9
	20	29 09.5	130 19.4	49.1	122 22.3	04.2	78 31.0	53.5	88 32.7	47.2					
	21	44 12.0	145 18.5	.. 49.5	137 22.7	.. 04.3	93 32.9	.. 53.4	103 34.8	.. 47.1				S.H.A.	Mer. Pass.
	22	59 14.4	160 17.5	49.8	152 23.1	04.4	108 34.9	53.3	118 37.0	47.1			Venus	103 38.9	11 17
23	74 16.9	175 16.6	50.2	167 23.5	04.4	123 36.8	53.1	133 39.2	47.0			Mars	94 42.7	11 51	
Mer. Pass. 18 07.6		<i>v</i> -0.9	<i>d</i> 0.4		<i>v</i> 0.4	<i>d</i> 0.1	<i>v</i> 1.9	<i>d</i> 0.1	<i>v</i> 2.2	<i>d</i> 0.1			Jupiter	49 45.0	14 50
													Saturn	59 35.6	14 10

G.M.T.	SUN				MOON				Lat.	Twilight		Sun-rise	Moonrise								
	G.H.A.		Dec.	H.P.	G.H.A.	v	Dec.	d		Naut.	Civil		18	19	20	21					
	°	'										°					'	°	'	°	'
MONDAY	18 00	180	54.5	S 23	22.6	50	33.4	10.7	N	8	58.8	10.4	58.0	N 72	08 24	09 53	■	12 55	12 52	12 50	12 51
	01	195	54.2		22.7	65	03.1	10.6		9	09.2	10.3	58.0	68	07 48	09 18	■	13 09	13 14	13 23	13 41
	02	210	53.9		22.7	79	32.7	10.6		9	19.5	10.2	58.0	66	07 35	08 52	10 33	13 20	13 31	13 48	14 13
	03	225	53.6		22.8	94	02.3	10.6		9	29.7	10.2	58.0	64	07 24	08 33	09 51	13 30	13 46	14 07	14 37
	04	240	53.3		22.9	108	31.9	10.6		9	39.9	10.1	57.9	62	07 14	08 16	09 22	13 39	13 58	14 22	14 56
	05	255	52.9		23.0	123	01.5	10.6		9	50.0	10.0	57.9	60	07 06	08 03	09 00	13 46	14 08	14 36	15 11
	06	270	52.6	S 23	23.0	137	31.1	10.6	N 10	00.0	10.0	57.9	N 58	06 59	07 51	08 43	13 52	14 17	14 47	15 24	
	07	285	52.3		23.1	152	00.7	10.5		10	10.0	10.0	57.9	56	06 52	07 41	08 28	13 58	14 25	14 57	15 36
	08	300	52.0		23.2	166	30.2	10.5		10	20.0	9.9	57.9	54	06 46	07 32	08 16	14 03	14 32	15 06	15 46
	09	315	51.7		23.3	180	59.7	10.5		10	29.9	9.8	57.9	52	06 40	07 24	08 04	14 08	14 38	15 13	15 55
TUESDAY	10 00	330	51.4		23.3	195	29.2	10.5		10	39.7	9.7	57.8	50	06 35	07 16	07 54	14 12	14 44	15 21	16 03
	11	345	51.1		23.4	209	58.7	10.5		10	49.4	9.7	57.8	45	06 23	07 00	07 34	14 21	14 57	15 36	16 20
	12	0	50.8	S 23	23.5	224	28.2	10.4	N 10	59.1	9.7	57.8	N 40	06 12	06 46	07 17	14 29	15 07	15 48	16 34	
	13	15	50.5		23.6	238	57.6	10.4		11	08.8	9.5	57.8	35	06 03	06 35	07 03	14 36	15 16	15 59	16 46
	14	30	50.2		23.6	253	27.0	10.5		11	18.3	9.5	57.8	30	05 54	06 24	06 50	14 41	15 23	16 08	16 56
	15	45	49.9		23.7	267	56.5	10.3		11	27.8	9.4	57.7	20	05 38	06 05	06 29	14 52	15 37	16 24	17 14
	16	60	49.6		23.8	282	25.8	10.4		11	37.2	9.4	57.7	N 10	05 22	05 48	06 11	15 01	15 49	16 39	17 29
	17	75	49.3		23.8	296	55.2	10.4		11	46.6	9.3	57.7	0	05 05	05 31	05 53	15 09	16 00	16 52	17 44
	18	90	49.0	S 23	23.9	311	24.6	10.3	N 11	55.9	9.2	57.7	S 10	04 46	05 13	05 36	15 18	16 11	17 05	17 59	
	19	105	48.6		24.0	325	53.9	10.3		12	05.1	9.2	57.7	20	04 23	04 52	05 17	15 27	16 24	17 20	18 15
WEDNESDAY	20 00	120	48.3		24.0	340	23.2	10.3		12	14.3	9.1	57.7	30	03 54	04 27	04 55	15 37	16 38	17 37	18 33
	01	135	48.0		24.1	354	52.5	10.3		12	23.4	9.0	57.6	35	03 35	04 12	04 42	15 43	16 45	17 46	18 43
	02	150	47.7		24.2	9	21.8	10.3		12	32.4	8.9	57.6	40	03 12	03 54	04 27	15 50	16 55	17 57	18 55
	03	165	47.4		24.2	23	51.1	10.2		12	41.3	8.9	57.6	45	02 41	03 31	04 09	15 58	17 05	18 10	19 10
	04	180	47.1	S 23	24.3	38	20.3	10.2	N 12	50.2	8.8	57.6	S 50	01 56	03 01	03 46	16 08	17 19	18 26	19 27	
	05	195	46.8		24.3	52	49.5	10.2		12	59.0	8.7	57.6	52	01 28	02 46	03 35	16 13	17 25	18 33	19 35
	06	210	46.5		24.4	67	18.7	10.2		13	07.7	8.6	57.5	54	00 42	02 28	03 23	16 18	17 32	18 41	19 45
	07	225	46.2		24.5	81	47.9	10.1		13	16.3	8.6	57.5	56	///	02 06	03 09	16 23	17 39	18 51	19 55
	08	240	45.9		24.5	96	17.0	10.2		13	24.9	8.5	57.5	58	///	01 36	02 52	16 30	17 48	19 01	20 07
	09	255	45.6		24.6	110	46.2	10.1		13	33.4	8.4	57.5	S 60	///	00 47	02 31	16 37	17 58	19 13	20 21
THURSDAY	10 00	270	45.3	S 23	24.6	125	15.3	10.1	N 13	41.8	8.3	57.5	Lat.	Sun-set	Twilight		Moonset				
	01	285	45.0		24.7	139	44.4	10.1		13	50.1	8.3	57.4			Civil	Naut.	18	19	20	21
	02	300	44.6		24.7	154	13.5	10.0		13	58.4	8.1	57.4	h m	h m	h m	h m	h m	h m	h m	h m
	03	315	44.3		24.8	168	42.5	10.1		14	06.5	8.1	57.4	N 72	■	12 59	15 30	04 54	06 55	09 10	□
	04	330	44.0		24.8	183	11.6	10.0		14	14.6	8.0	57.4	N 70	■	14 01	15 50	04 38	06 27	08 16	10 05
	05	345	43.7		24.9	197	40.6	10.0		14	22.6	7.9	57.4	68	■	14 37	16 06	04 25	06 06	07 44	09 14
	06	0	43.4	S 23	24.9	212	09.6	10.0	N 14	30.5	7.9	57.3	66	13 21	15 02	16 19	04 15	05 50	07 20	08 43	
	07	15	43.1		25.0	226	38.6	9.9		14	38.4	7.7	57.3	64	14 04	15 22	16 30	04 07	05 36	07 02	08 20
	08	30	42.8		25.0	241	07.5	10.0		14	46.1	7.7	57.3	62	14 32	15 38	16 40	03 59	05 25	06 47	08 01
	09	45	42.5		25.1	255	36.5	9.9		14	53.8	7.6	57.3	60	14 53	15 51	16 48	03 53	05 15	06 34	07 46
FRIDAY	10 00	60	42.2		25.1	270	05.4	9.9		15	01.4	7.5	57.3	N 58	15 11	16 03	16 56	03 47	05 07	06 23	07 33
	01	75	41.9		25.2	284	34.3	9.9		15	08.9	7.4	57.3	56	15 26	16 13	17 02	03 42	05 00	06 13	07 22
	02	90	41.6	S 23	25.2	299	03.2	9.8	N 15	16.3	7.3	57.2	54	15 39	16 22	17 09	03 38	04 53	06 05	07 12	
	03	105	41.3		25.3	313	32.0	9.9		15	23.6	7.2	57.2	52	15 50	16 31	17 14	03 34	04 47	05 58	07 03
	04	120	40.9		25.3	328	00.9	9.8		15	30.8	7.2	57.2	50	15 59	16 38	17 20	03 30	04 42	05 51	06 56
	05	135	40.6		25.4	342	29.7	9.8		15	38.0	7.0	57.2	45	16 20	16 54	17 31	03 22	04 31	05 36	06 39
	06	150	40.3		25.4	356	58.5	9.8		15	45.0	7.0	57.2	N 40	16 37	17 08	17 42	03 16	04 21	05 25	06 25
	07	165	40.0		25.5	11	27.3	9.8		15	52.0	6.9	57.1	35	16 51	17 19	17 51	03 10	04 13	05 15	06 14
	08	180	39.7	S 23	25.5	25	56.1	9.8	N 15	58.9	6.8	57.1	30	17 04	17 30	18 00	03 06	04 06	05 06	06 04	
	09	195	39.4		25.5	40	24.9	9.7		16	05.7	6.7	57.1	20	17 25	17 49	18 16	02 57	03 54	04 51	05 47
SATURDAY	10 00	210	39.1		25.6	54	53.6	9.7		16	12.4	6.6	57.1	N 10	17 43	18 06	18 33	02 50	03 43	04 37	05 31
	01	225	38.8		25.6	69	22.3	9.8		16	19.0	6.5	57.1	0	18 01	18 23	18 50	02 43	03 33	04 25	05 17
	02	240	38.5		25.7	83	51.1	9.7		16	25.5	6.4	57.0	S 10	18 18	18 41	19 09	02 36	03 23	04 13	05 03
	03	255	38.2		25.7	98	19.8	9.6		16	31.9	6.3	57.0	20	18 37	19 02	19 31	02 28	03 13	03 59	04 48
	04	270	37.9	S 23	25.7	112	48.4	9.7	N 16	38.2	6.2	57.0	30	18 59	19 27	20 00	02 20	03 01	03 44	04 30	
	05	285	37.5		25.8	127	17.1	9.7		16	44.4	6.1	57.0	35	19 12	19 42	20 19	02 15	02 54	03 36	04 21
	06	300	37.2		25.8	141	45.8	9.6		16											

G.M.T.		ARIES		VENUS -3.4		MARS +1.5		JUPITER -1.6		SATURN +0.8		STARS		
		G.H.A.		G.H.A.	Dec.	G.H.A.	Dec.	G.H.A.	Dec.	G.H.A.	Dec.	Name	S.H.A.	Dec.
T H U R S D A Y	d	h												
	00	89 19.4	190 15.7	S22 50.5	182 23.9	S24 04.5	138 38.7	S18 53.0	148 41.4	S20 47.0	Acamar	315 47.6	S 40 27.7	
	01	104 21.8	205 14.7	50.8	197 24.3	04.6	153 40.7	52.9	163 43.6	46.9	Achernar	335 55.5	S 57 26.2	
	02	119 24.3	220 13.8	51.2	212 24.7	04.6	168 42.6	52.7	178 45.7	46.9	Acrux	173 52.9	S 62 52.9	
	03	134 26.8	235 12.9	.. 51.5	227 25.2	.. 04.7	183 44.5	.. 52.6	193 47.9	.. 46.8	Adhara	255 42.8	S 28 55.2	
	04	149 29.2	250 11.9	51.8	242 25.6	04.7	198 46.4	52.4	208 50.1	46.8	Aldebaran	291 33.8	N 16 25.9	
	05	164 31.7	265 11.0	52.2	257 26.0	04.8	213 48.4	52.3	223 52.3	46.7				
	06	179 34.2	280 10.1	S22 52.5	272 26.4	S24 04.9	228 50.3	S18 52.2	238 54.5	S20 46.7	Alioth	166 55.1	N 56 09.8	
	07	194 36.6	295 09.1	52.8	287 26.8	04.9	243 52.2	52.0	253 56.6	46.6	Alkaid	153 29.9	N 49 30.0	
	08	209 39.1	310 08.2	53.2	302 27.2	05.0	258 54.1	51.9	268 58.8	46.5	Al Na'ir	28 32.9	S 47 09.9	
	09	224 41.6	325 07.3	.. 53.5	317 27.7	.. 05.0	273 56.1	.. 51.8	284 01.0	.. 46.5	Alnilam	276 25.6	S 1 13.6	
	10	239 44.0	340 06.3	53.8	332 28.1	05.1	288 58.0	51.6	299 03.2	46.4	Alphard	218 34.2	S 8 29.5	
	11	254 46.5	355 05.4	54.1	347 28.5	05.1	303 59.9	51.5	314 05.3	46.4				
	12	269 48.9	10 04.5	S22 54.5	2 28.9	S24 05.2	319 01.8	S18 51.4	329 07.5	S20 46.3	Alphecca	126 44.4	N 26 50.6	
	13	284 51.4	25 03.5	54.8	17 29.3	05.3	334 03.8	51.2	344 09.7	46.3	Alpheratz	358 23.8	N 28 52.9	
	14	299 53.9	40 02.6	55.1	32 29.7	05.3	349 05.7	51.1	359 11.9	46.2	Altair	62 46.6	N 8 46.1	
	15	314 56.3	55 01.7	.. 55.4	47 30.1	.. 05.4	4 07.6	.. 50.9	14 14.1	.. 46.2	Ankaa	353 54.1	S 42 31.0	
	16	329 58.8	70 00.7	55.8	62 30.5	05.4	19 09.6	50.8	29 16.2	46.1	Antares	113 14.4	S 26 20.7	
	17	345 01.3	84 59.8	56.1	77 31.0	05.5	34 11.5	50.7	44 18.4	46.1				
	18	0 03.7	99 58.9	S22 56.4	92 31.4	S24 05.5	49 13.4	S18 50.5	59 20.6	S20 46.0	Arcturus	146 31.5	N 19 22.8	
	19	15 06.2	114 57.9	56.7	107 31.8	05.6	64 15.3	50.4	74 22.8	46.0	Atria	108 51.8	S 68 57.4	
	20	30 08.7	129 57.0	57.0	122 32.2	05.6	79 17.3	50.3	89 25.0	45.9	Avior	234 33.4	S 59 23.1	
	21	45 11.1	144 56.1	.. 57.3	137 32.6	.. 05.7	94 19.2	.. 50.1	104 27.1	.. 45.9	Bellatrix	279 13.5	N 6 18.9	
22	60 13.6	159 55.1	57.6	152 33.0	05.7	109 21.1	50.0	119 29.3	45.8	Betelgeuse	271 43.1	N 7 24.0		
23	75 16.0	174 54.2	58.0	167 33.4	05.8	124 23.0	49.9	134 31.5	45.8					
F R I D A Y	2200	90 18.5	189 53.3	S22 58.3	182 33.8	S24 05.8	139 24.9	S18 49.7	149 33.7	S20 45.7	Canopus	264 12.9	S 52 40.5	
	01	105 21.0	204 52.3	58.6	197 34.3	05.9	154 26.9	49.6	164 35.8	45.7	Capella	281 31.6	N 45 57.6	
	02	120 23.4	219 51.4	58.9	212 34.7	05.9	169 28.8	49.4	179 38.0	45.6	Deneb	49 58.4	N 45 08.8	
	03	135 25.9	234 50.4	.. 59.2	227 35.1	.. 06.0	184 30.7	.. 49.3	194 40.2	.. 45.5	Denebola	183 13.4	N 14 47.1	
	04	150 28.4	249 49.5	59.5	242 35.5	06.0	199 32.6	49.2	209 42.4	45.5	Diphda	349 34.9	S 18 11.9	
	05	165 30.8	264 48.6	22 59.8	257 35.9	06.1	214 34.6	49.0	224 44.6	45.4				
	06	180 33.3	279 47.6	S23 00.1	272 36.3	S24 06.1	229 36.5	S18 48.9	239 46.7	S20 45.4	Dubhe	194 39.3	N 61 57.1	
	07	195 35.8	294 46.7	00.4	287 36.7	06.2	244 38.4	48.8	254 48.9	45.3	Elmath	279 01.5	N 28 34.5	
	08	210 38.2	309 45.8	00.7	302 37.1	06.2	259 40.3	48.6	269 51.1	45.3	Eltanin	91 04.8	N 51 29.7	
	09	225 40.7	324 44.8	.. 01.0	317 37.6	.. 06.3	274 42.3	.. 48.5	284 53.3	.. 45.2	Enif	34 25.6	N 9 42.1	
	10	240 43.2	339 43.9	01.3	332 38.0	06.3	289 44.2	48.4	299 55.4	45.2	Fomalhaut	16 07.1	S 29 49.6	
	11	255 45.6	354 42.9	01.6	347 38.4	06.4	304 46.1	48.2	314 57.6	45.1				
	12	270 48.1	9 42.0	S23 01.9	2 38.8	S24 06.4	319 48.0	S18 48.1	329 59.8	S20 45.1	Gacrux	172 44.4	S 56 53.6	
	13	285 50.5	24 41.1	02.2	17 39.2	06.5	334 50.0	47.9	345 02.0	45.0	Gienah	176 32.4	S 17 19.7	
	14	300 53.0	39 40.1	02.5	32 39.6	06.5	349 51.9	47.8	0 04.1	45.0	Hadar	149 43.6	S 60 11.0	
	15	315 55.5	54 39.2	.. 02.8	47 40.0	.. 06.6	4 53.8	.. 47.7	15 06.3	.. 44.9	Hamal	328 44.6	N 23 17.0	
	16	330 57.9	69 38.2	03.1	62 40.4	06.6	19 55.7	47.5	30 08.5	44.8	Kaus Aust.	84 35.9	S 34 24.2	
	17	346 00.4	84 37.3	03.3	77 40.8	06.6	34 57.7	47.4	45 10.7	44.8				
	18	1 02.9	99 36.4	S23 03.6	92 41.3	S24 06.7	49 59.6	S18 47.3	60 12.9	S20 44.7	Kochab	137 19.3	N 74 18.6	
	19	16 05.3	114 35.4	03.9	107 41.7	06.7	65 01.5	47.1	75 15.0	44.7	Markab	14 17.3	N 15 00.1	
	20	31 07.8	129 34.5	04.2	122 42.1	06.8	80 03.4	47.0	90 17.2	44.6	Menkar	314 55.6	N 3 56.4	
	21	46 10.3	144 33.5	.. 04.5	137 42.5	.. 06.8	95 05.3	.. 46.8	105 19.4	.. 44.6	Menkent	148 53.8	S 36 10.7	
	22	61 12.7	159 32.6	04.8	152 42.9	06.9	110 07.3	46.7	120 21.6	44.5	Mlaplacidus	221 47.2	S 69 33.4	
23	76 15.2	174 31.6	05.1	167 43.3	06.9	125 09.2	46.6	135 23.7	44.5					
S A T U R D A Y	2300	91 17.7	189 30.7	S23 05.3	182 43.7	S24 06.9	140 11.1	S18 46.4	150 25.9	S20 44.4	Mirfak	309 35.8	N 49 43.7	
	01	106 20.1	204 29.8	05.6	197 44.1	07.0	155 13.0	46.3	165 28.1	44.4	Nunki	76 47.0	S 26 20.7	
	02	121 22.6	219 28.8	05.9	212 44.5	07.0	170 15.0	46.1	180 30.3	44.3	Peacock	54 21.1	S 56 51.6	
	03	136 25.0	234 27.9	.. 06.2	227 44.9	.. 07.1	185 16.9	.. 46.0	195 32.4	.. 44.3	Pollux	244 15.0	N 28 07.0	
	04	151 27.5	249 26.9	06.4	242 45.3	07.1	200 18.8	45.9	210 34.6	44.2	Procyon	245 40.2	N 5 19.3	
	05	166 30.0	264 26.0	06.7	257 45.8	07.1	215 20.7	45.7	225 36.8	44.1				
	06	181 32.4	279 25.0	S23 07.0	272 46.2	S24 07.2	230 22.6	S18 45.6	240 39.0	S20 44.1	Rasalhague	96 43.0	N 12 35.3	
	07	196 34.9	294 24.1	07.3	287 46.6	07.2	245 24.6	45.5	255 41.1	44.0	Regulus	208 24.8	N 12 09.2	
	08	211 37.4	309 23.2	07.5	302 47.0	07.2	260 26.5	45.3	270 43.3	44.0	Rigel	281 49.2	S 8 14.8	
	09	226 39.8	324 22.2	.. 07.8	317 47.4	.. 07.3	275 28.4	.. 45.2	285 45.5	.. 43.9	Rigel Kent.	140 45.4	S 60 40.3	
	10	241 42.3	339 21.3	08.1	332 47.8	07.3	290 30.3	45.0	300 47.7	43.9	Sabik	102 57.6	S 15 40.6	
	11	256 44.8	354 20.3	08.3	347 48.2	07.3	305 32.2	44.9	315 49.8	43.8				
	12	271 47.2	9 19.4	S23 08.6	2 48.6	S24 07.4	320 34.2	S18 44.8	330 52.0	S20 43.8	Schedar	350 24.9	N 56 19.9	
	13	286 49.7	24 18.4	08.9	17 49.0	07.4	335 36.1	44.6	345 54.2	43.7	Shaula	97 15.3	S 37 04.5	
	14	301 52.2	39 17.5	09.1	32 49.4	07.5	350 38.0	44.5	0 56.4	43.7	Sirius	259 07.8	S 16 39.9	
	15	316 54.6	54 16.5	.. 09.4	47 49.8	.. 07.5	5 39.9	.. 44.3	15 58.5	.. 43.6	Spica	159 12.5	S 10 57.6	
	16	331 57.1	69 15.6	09.7	62 50.3	07.5	20 41.9	44.2	31 00.7	43.6	Suhail	223 20.8	S 43 16.6	
	17	346 59.5	84 14.6	09.9	77 50.7	07.5	35 43.8	44.1	46 02.9	43.5				
	18	2 02.0	99 13.7	S23 10.2	92 51.1	S24 07.6	50 45.7	S18 43.9	61 05.1	S20 43.4	Vega	81 05.8	N 38 45.0	
	19	17 04.5	114 12.7	10.4	107 51.5	07.6	65 47.6	43.8	76 07.3	43.4	Zuben'ubi	137 48.9	S 15 52.9	
	20	32 06.9	129 11.8	10.7	122 51.9	07.6	80 49.5	43.6	91 09.4	43.3				
	21	47 09.4	144 10.9	.. 10.9	137 52.3	.. 07.7	95 51.5	.. 43.5	106 11.6	.. 43.3				
	22	62 11.9	159 09.9	11.2	152 52.7	07.7	110 53.4	43.4	121 13.8	43.2				
23	77 14.3	174 09.0	11.4	167 53.1	07.7	125 55.3	43.2	136 16.0	43.2					
Mer. Pass. 17 55.8		v 0-0.9 d 0-0.3		v 0-0.4 d 0-0.0		v 1-0.9 d 0-0.1		v 2-0.2 d 0-0.1						
												S.H.A.	Mer. Pass.	
												o	m	
												Venus	99 34.8 11 21	
												Mars	92 15.3 11 49	
												Jupiter	49 06.4 14 40	
												Saturn	59 15.2 14 00	

	ARIES			VENUS -3.4			MARS +1.5			JUPITER -1.6			SATURN +0.8			STARS		
G.M.T.	G.H.A.	G.H.A.	Dec.	G.H.A.	Dec.	G.H.A.	Dec.	G.H.A.	Dec.	G.H.A.	Dec.	Name	S.H.A.	Dec.				
SUNDAY	24 ^d 00 ^h	92 16.8	189 08.0	S 23 11.7	182 53.5	S 24 07.8	140 57.2	S 18 43.1	151 18.1	S 20 43.1	Acamar	315 47.6	S 40 27.7					
	01	107 19.3	204 07.1	11.9	197 53.9	07.8	155 59.1	42.9	166 20.3	43.1	Achernar	335 55.6	S 57 26.2					
	02	122 21.7	219 06.1	12.2	212 54.3	07.8	171 01.1	42.8	181 22.5	43.0	Acrux	173 52.9	S 62 52.9					
	03	137 24.2	234 05.2	.. 12.4	227 54.7	.. 07.8	186 03.0	.. 42.7	196 24.7	.. 43.0	Adhara	255 42.8	S 28 55.2					
	04	152 26.7	249 04.2	12.7	242 55.1	07.9	201 04.9	42.5	211 26.8	42.9	Aldebaran	291 33.8	N 16 25.9					
	05	167 29.1	264 03.3	12.9	257 55.5	07.9	216 06.8	42.4	226 29.0	42.9								
	06	182 31.6	279 02.3	S 23 13.2	272 56.0	S 24 07.9	231 08.7	S 18 42.2	241 31.2	S 20 42.8	Alioth	166 55.0	N 56 09.8					
	07	197 34.0	294 01.4	13.4	287 56.4	08.0	246 10.6	42.1	256 33.4	42.7	Alkaid	153 29.8	N 49 30.0					
	08	212 36.5	309 00.4	13.7	302 56.8	08.0	261 12.6	42.0	271 35.5	42.7	Al Na'ir	28 32.9	S 47 09.9					
	09	227 39.0	323 59.5	.. 13.9	317 57.2	.. 08.0	276 14.5	.. 41.8	286 37.7	.. 42.6	Alnilam	276 25.6	S 1 13.6					
	10	242 41.4	338 58.5	14.1	332 57.6	08.0	291 16.4	41.7	301 39.9	42.6	Alphard	218 34.2	S 8 29.6					
	11	257 43.9	353 57.6	14.4	347 58.0	08.1	306 18.3	41.5	316 42.0	42.5								
	12	272 46.4	8 56.6	S 23 14.6	2 58.4	S 24 08.1	321 20.2	S 18 41.4	331 44.2	S 20 42.5	Alphecca	126 44.3	N 26 50.5					
	13	287 48.8	23 55.7	14.9	17 58.8	08.1	336 22.2	41.3	346 46.4	42.4	Alpheratz	358 23.8	N 28 52.9					
	14	302 51.3	38 54.7	15.1	32 59.2	08.1	351 24.1	41.1	1 48.6	42.4	Altair	62 46.6	N 8 46.1					
	15	317 53.8	53 53.8	.. 15.3	47 59.6	.. 08.1	6 26.0	.. 41.0	16 50.7	.. 42.3	Ankaa	353 54.1	S 42 31.0					
	16	332 56.2	68 52.8	15.6	63 00.0	08.2	21 27.9	40.8	31 52.9	42.3	Antares	113 14.4	S 26 20.7					
	17	347 58.7	83 51.8	15.8	78 00.4	08.2	36 29.8	40.7	46 55.1	42.2								
	18	3 01.2	98 50.9	S 23 16.0	93 00.8	S 24 08.2	51 31.7	S 18 40.6	61 57.3	S 20 42.1	Arcturus	146 31.5	N 19 22.8					
	19	18 03.6	113 49.9	16.2	108 01.2	08.2	66 33.7	40.4	76 59.4	42.1	Atria	108 51.8	S 68 57.4					
	20	33 06.1	128 49.0	16.5	123 01.6	08.3	81 35.6	40.3	92 01.6	42.0	Avior	234 33.3	S 59 23.1					
	21	48 08.5	143 48.0	.. 16.7	138 02.0	.. 08.3	96 37.5	.. 40.1	107 03.8	.. 42.0	Bellatrix	279 13.5	N 6 18.9					
	22	63 11.0	158 47.1	16.9	153 02.5	08.3	111 39.4	40.0	122 06.0	41.9	Betelgeuse	271 43.1	N 7 23.9					
	23	78 13.5	173 46.1	17.1	168 02.9	08.3	126 41.3	39.9	137 08.1	41.9								
MONDAY	25 ^d 00 ^h	93 15.9	188 45.2	S 23 17.4	183 03.3	S 24 08.3	141 43.2	S 18 39.7	152 10.3	S 20 41.8	Canopus	264 12.9	S 52 40.6					
	01	108 18.4	203 44.2	17.6	198 03.7	08.3	156 45.2	39.6	167 12.5	41.8	Capella	281 31.6	N 45 57.6					
	02	123 20.9	218 43.3	17.8	213 04.1	08.4	171 47.1	39.4	182 14.6	41.8	Deneb	49 58.4	N 45 08.8					
	03	138 23.3	233 42.3	.. 18.0	228 04.5	.. 08.4	186 49.0	.. 39.3	197 16.8	.. 41.7	Denebola	183 13.4	N 14 47.0					
	04	153 25.8	248 41.4	18.2	243 04.9	08.4	201 50.9	39.2	212 19.0	41.6	Diphda	349 34.9	S 18 11.9					
	05	168 28.3	263 40.4	18.5	258 05.3	08.4	216 52.8	39.0	227 21.2	41.5								
	06	183 30.7	278 39.4	S 23 18.7	273 05.7	S 24 08.4	231 54.7	S 18 38.9	242 23.3	S 20 41.5	Dubhe	194 39.3	N 61 57.1					
	07	198 33.2	293 38.5	18.9	288 06.1	08.4	246 56.7	38.7	257 25.5	41.4	Elmath	279 01.5	N 28 34.5					
	08	213 35.6	308 37.5	19.1	303 06.5	08.5	261 58.6	38.6	272 27.7	41.4	Eltanin	91 04.8	N 51 29.7					
	09	228 38.1	323 36.6	.. 19.3	318 06.9	.. 08.5	277 00.5	.. 38.5	287 29.9	.. 41.3	Enif	34 25.6	N 9 42.2					
	10	243 40.6	338 35.6	19.5	333 07.3	08.5	292 02.4	38.3	302 32.0	41.3	Fomalhaut	16 07.1	S 29 49.6					
	11	258 43.0	353 34.7	19.7	348 07.7	08.5	307 04.3	38.2	317 34.2	41.2								
	12	273 45.5	8 33.7	S 23 19.9	3 08.1	S 24 08.5	322 06.2	S 18 38.0	332 36.4	S 20 41.2	Gacrux	172 44.4	S 56 53.7					
	13	288 48.0	23 32.8	20.1	18 08.5	08.5	337 08.2	37.9	347 38.6	41.1	Gienah	176 32.4	S 17 19.7					
	14	303 50.4	38 31.8	20.3	33 08.9	08.5	352 10.1	37.7	2 40.7	41.1	Hadar	149 43.5	S 60 11.0					
	15	318 52.9	53 30.9	.. 20.5	48 09.3	.. 08.6	7 12.0	.. 37.6	17 42.9	.. 41.0	Hamal	328 44.6	N 23 17.0					
	16	333 55.4	68 29.9	20.7	63 09.7	08.6	22 13.9	37.5	32 45.1	40.9	Kaus Aust.	84 35.9	S 34 24.2					
	17	348 57.8	83 28.9	20.9	78 10.1	08.6	37 15.8	37.3	47 47.2	40.9								
	18	4 00.3	98 28.0	S 23 21.1	93 10.5	S 24 08.6	52 17.7	S 18 37.2	62 49.4	S 20 40.8	Kochab	137 19.2	N 74 18.5					
	19	19 02.8	113 27.0	21.3	108 10.9	08.6	67 19.7	37.0	77 51.6	40.8	Markab	14 17.3	N 15 00.1					
	20	34 05.2	128 26.1	21.5	123 11.3	08.6	82 21.6	36.9	92 53.8	40.7	Menkar	314 55.6	N 3 56.4					
	21	49 07.7	143 25.1	.. 21.7	138 11.7	.. 08.6	97 23.5	.. 36.7	107 55.9	.. 40.7	Menkent	148 53.8	S 36 10.7					
	22	64 10.1	158 24.2	21.9	153 12.1	08.6	112 25.4	36.6	122 58.1	40.6	Miaplacidus	221 47.2	S 69 33.4					
	23	79 12.6	173 23.2	22.1	168 12.5	08.6	127 27.3	36.5	138 00.3	40.6								
TUESDAY	26 ^d 00 ^h	94 15.1	188 22.2	S 23 22.3	183 12.9	S 24 08.6	142 29.2	S 18 36.3	153 02.5	S 20 40.5	Mirfak	309 35.8	N 49 43.7					
	01	109 17.5	203 21.3	22.5	198 13.3	08.6	157 31.1	36.2	168 04.6	40.5	Nunki	76 47.0	S 26 20.7					
	02	124 20.0	218 20.3	22.7	213 13.7	08.7	172 33.1	36.0	183 06.8	40.4	Peacock	54 21.1	S 56 51.6					
	03	139 22.5	233 19.4	.. 22.9	228 14.1	.. 08.7	187 35.0	.. 35.9	198 09.0	.. 40.3	Pollux	244 15.0	N 28 07.0					
	04	154 24.9	248 18.4	23.1	243 14.5	08.7	202 36.9	35.8	213 11.1	40.3	Procyon	245 40.2	N 5 19.3					
	05	169 27.4	263 17.4	23.2	258 14.9	08.7	217 38.8	35.6	228 13.3	40.2								
	06	184 29.9	278 16.5	S 23 23.4	273 15.3	S 24 08.7	232 40.7	S 18 35.5	243 15.5	S 20 40.2	Rasalhague	96 43.0	N 12 35.3					
	07	199 32.3	293 15.5	23.6	288 15.8	08.7	247 42.6	35.3	258 17.7	40.1	Regulus	208 24.8	N 12 09.2					
	08	214 34.8	308 14.6	23.8	303 16.2	08.7	262 44.5	35.2	273 19.8	40.1	Rigel	281 49.2	S 8 14.8					
	09	229 37.3	323 13.6	.. 24.0	318 16.6	.. 08.7	277 46.5	.. 35.0	288 22.0	.. 40.0	Rigel Kent.	140 45.4	S 60 40.3					
	10	244 39.7	338 12.7	24.2	333 17.0	08.7	292 48.4	34.9	303 24.2	40.0	Sabik	102 57.6	S 15 40.6					
	11	259 42.2	353 11.7	24.3	348 17.4	08.7	307 50.3	34.8	318 26.3	39.9								
	12	274 44.6	8 10.7	S 23 24.5	3 17.8	S 24 08.7	322 52.2	S 18 34.6	333 28.5	S 20 39.8	Schedar	350 24.9	N 56 19.9					
	13	289 47.1	23 09.8	24.7	18 18.2	08.7	337 54.1	34.5	348 30.7	39.8	Shaula	97 15.3	S 37 04.5					
	14	304 49.6	38 08.8	24.9	33 18.6	08.7	352 56.0	34.3	3 32.9	39.7	Sirius	259 07.8	S 16 39.9					
	15	319 52.0	53 07.9	.. 25.0	48 19.0	.. 08.7	7 57.9	.. 34.2	18 35.0	.. 39.7	Spica	159 12.5	S 10 57.6					
	16	334 54.5	68 06.9	25.2	63 19.4	08.7	22 59.9	34.0	33 37.2	39.6	Suhail	223 20.8	S 43 16.6					
	17	349 57.0	83 05.9	25.4	78 19.8	08.7	38 01.8	33.9	48 39.4	39.6								
	18	4 59.4	98 05.0	S 23 25.5	93 20.2	S 24 08.7	53 03.7	S 18 33.8	63 41.5	S 20 39.5	Vega	81 05.8	N 38 45.0					
	19	20 01.9	113 04.0	25.7	108 20.6	08.7	68 05.6	33.6	78 43.7	39.5	Zuben'ubi	137 48.8	S 15 52.9					
	20	35 04.4	128 03.1	25.9	123 21.0	08.7	83 07.5	33.5	93 45.9	39.4								
	21	50 06.8	143 02.1	.. 26.0	138 21.4	.. 08.7	98 09.4	.. 33.3	108 48.0	.. 39.3								
	22	65 09.3	158 01.1	26.2	153 21.8	08.7	113 11.3	33.2	123 50.2	39.3								
	23	80 11.7	173 00.2	26.4	168 22.2	08.7	128 13.2	33.0	138 52.4	39.2								
Mer. Pass. 17 44.0		v -1.0 d 0.2		v 0.4 d 0.0		v 1.9 d 0.1		v 2.2 d 0.1										
												S.H.A.		Mer. Pass.				
												Venus		95 29.3 11 26				
												Mars		89 47.4 11 47				
												Jupiter		48 27.3 14 31				
												Saturn		58 54.4 13 49				

G.M.T.	SUN				MOON				Lat.	Twilight		Sun-rise	Moonrise					
	G.H.A.		Dec.	v	G.H.A.		Dec.	d		H.P.	Naut.		Civil	24	25	26	27	
	d	h			d	h												
SUNDAY	24 00	180	09.9	S23 25.7	336	04.7	11.0	N19 07.1	3.0	55.1	N 72	08 27	10 57			16 51	18 44	20 28
	01	195	09.6	25.6	350	34.7	11.0	19 04.1	3.1	55.1	N 70	08 07	09 55		15 53	17 32	19 09	20 43
	02	210	09.3	25.6	5	04.7	11.1	19 01.0	3.1	55.1	68	07 51	09 20		16 34	18 00	19 27	20 54
	03	225	09.0	25.6	19	34.8	11.1	18 57.9	3.3	55.1	66	07 38	08 55	10 35	17 02	18 21	19 42	21 04
	04	240	08.7	25.5	34	04.9	11.1	18 54.6	3.3	55.1	64	07 27	08 35	09 53	17 23	18 38	19 55	21 12
	05	255	08.4	25.5	48	35.0	11.2	18 51.3	3.4	55.0	62	07 17	08 19	09 25	17 41	18 52	20 05	21 19
	06	270	08.1	S23 25.4	63	05.2	11.3	N18 47.9	3.5	55.0	60	07 09	08 06	09 03	17 55	19 03	20 14	21 25
	07	285	07.8	25.4	77	35.5	11.3	18 44.4	3.6	55.0	N 58	07 01	07 54	08 46	18 07	19 13	20 21	21 30
	08	300	07.5	25.4	92	05.8	11.3	18 40.8	3.7	55.0	56	06 55	07 43	08 31	18 17	19 22	20 28	21 35
	09	315	07.1	25.3	106	36.1	11.4	18 37.1	3.8	55.0	54	06 48	07 35	08 19	18 27	19 30	20 34	21 39
	10	330	06.8	25.3	121	06.5	11.4	18 33.3	3.8	55.0	52	06 43	07 26	08 07	18 35	19 37	20 39	21 43
	11	345	06.5	25.2	135	36.9	11.4	18 29.5	4.0	54.9	50	06 38	07 19	07 57	18 42	19 43	20 44	21 46
	12	0	06.2	S23 25.2	150	07.3	11.6	N18 25.5	4.0	54.9	45	06 26	07 03	07 37	18 58	19 56	20 55	21 54
	13	15	05.9	25.1	164	37.9	11.5	18 21.5	4.1	54.9	N 40	06 15	06 49	07 20	19 11	20 07	21 04	22 00
	14	30	05.6	25.1	179	08.4	11.6	18 17.4	4.3	54.9	35	06 06	06 38	07 06	19 22	20 17	21 11	22 05
	15	45	05.3	25.0	193	39.0	11.7	18 13.1	4.2	54.9	30	05 57	06 27	06 53	19 31	20 25	21 18	22 10
	16	60	05.0	25.0	208	09.7	11.7	18 08.9	4.4	54.9	20	05 41	06 08	06 32	19 48	20 39	21 29	22 18
	17	75	04.7	24.9	222	40.4	11.8	18 04.5	4.5	54.8	N 10	05 25	05 51	06 14	20 03	20 52	21 39	22 25
	18	90	04.4	S23 24.9	237	11.2	11.8	N18 00.0	4.5	54.8	0	05 08	05 34	05 56	20 16	21 03	21 48	22 32
	19	105	04.0	24.8	251	42.0	11.8	17 55.5	4.6	54.8	S 10	04 49	05 16	05 39	20 30	21 15	21 58	22 38
	20	120	03.7	24.8	266	12.8	11.9	17 50.9	4.7	54.8	20	04 26	04 55	05 20	20 44	21 27	22 07	22 45
	21	135	03.4	24.7	280	43.7	12.0	17 46.2	4.8	54.8	30	03 57	04 30	04 58	21 00	21 41	22 19	22 53
	22	150	03.1	24.7	295	14.7	12.0	17 41.4	4.9	54.8	35	03 38	04 15	04 45	21 10	21 49	22 25	22 58
	23	165	02.8	24.6	309	45.7	12.0	17 36.5	4.9	54.7	40	03 15	03 57	04 30	21 20	21 58	22 32	23 03
	24										45	02 44	03 34	04 12	21 33	22 09	22 41	23 09
MONDAY	25 00	180	02.5	S23 24.5	324	16.7	12.1	N17 31.6	5.0	54.7	S 50	01 59	03 05	03 49	21 49	22 22	22 51	23 16
	01	195	02.2	24.5	338	47.8	12.1	17 26.6	5.1	54.7	52	01 31	02 49	03 38	21 56	22 28	22 56	23 19
	02	210	01.9	24.4	353	18.9	12.2	17 21.5	5.2	54.7	54	00 45	02 31	03 26	22 04	22 35	23 01	23 23
	03	225	01.6	24.4	7	50.1	12.3	17 16.3	5.3	54.7	56	///	02 09	03 12	22 13	22 42	23 06	23 27
	04	240	01.3	24.3	22	21.4	12.3	17 11.0	5.3	54.7	58	///	01 39	02 55	22 23	22 51	23 13	23 31
	05	255	01.0	24.2	36	52.7	12.3	17 05.7	5.4	54.7	S 60	///	00 50	02 34	22 35	23 00	23 20	23 36
	06	270	00.6	S23 24.2	51	24.0	12.4	N17 00.3	5.5	54.6								
	07	285	00.3	24.1	65	55.4	12.4	16 54.8	5.6	54.6								
	08	300	00.0	24.1	80	26.8	12.5	16 49.2	5.6	54.6	Lat.	Sun-set	Twilight		Moonset			
	09	314	59.7	24.0	94	58.3	12.5	16 43.6	5.7	54.6			Civil	Naut.	24	25	26	27
	10	329	59.4	23.9	109	29.8	12.6	16 37.9	5.8	54.6	N 72	h m	h m	h m	h m	h m	h m	h m
	11	344	59.1	23.9	124	01.4	12.7	16 32.1	5.8	54.6	0		13 03	15 33		13 02	12 44	12 31
	12	359	58.8	S23 23.8	138	33.1	12.6	N16 26.3	5.9	54.6	N 70		14 05	15 53	12 21	12 20	12 18	12 15
	13	14	58.5	23.7	153	04.7	12.8	16 20.4	6.0	54.5	68		14 40	16 09	11 39	11 52	11 58	12 02
	14	29	58.2	23.7	167	36.5	12.7	16 14.4	6.1	54.5	66	13 25	15 05	16 22	11 11	11 30	11 42	11 51
	15	44	57.9	23.6	182	08.2	12.9	16 08.3	6.1	54.5	64	14 07	15 25	16 33	10 49	11 13	11 29	11 42
	16	59	57.5	23.5	196	40.1	12.9	16 02.2	6.2	54.5	62	14 35	15 41	16 43	10 32	10 59	11 18	11 34
	17	74	57.2	23.5	211	12.0	12.9	15 56.0	6.3	54.5	60	14 57	15 55	16 51	10 17	10 46	11 09	11 27
	18	89	56.9	S23 23.4	225	43.9	12.9	N15 49.7	6.3	54.5	N 58	15 14	16 06	16 59	10 05	10 36	11 01	11 21
	19	104	56.6	23.3	240	15.8	13.1	15 43.4	6.4	54.5	56	15 29	16 16	17 06	09 54	10 27	10 54	11 16
	20	119	56.3	23.2	254	47.9	13.0	15 37.0	6.5	54.5	54	15 42	16 25	17 12	09 44	10 19	10 47	11 11
	21	134	56.0	23.2	269	19.9	13.1	15 30.5	6.5	54.4	52	15 53	16 34	17 17	09 36	10 11	10 41	11 07
	22	149	55.7	23.1	283	52.0	13.2	15 24.0	6.6	54.4	50	16 03	16 41	17 23	09 28	10 05	10 36	11 03
	23	164	55.4	23.0	298	24.2	13.2	15 17.4	6.7	54.4	45	16 23	16 57	17 34	09 12	09 51	10 24	10 54
	TUESDAY	26 00	179	55.1	S23 22.9	312	56.4	13.3	N15 10.7	6.7	54.4	N 40	16 40	17 11	17 45	08 59	09 39	10 15
01		194	54.8	22.9	327	28.7	13.3	15 04.0	6.8	54.4	35	16 54	17 23	17 54	08 47	09 29	10 06	10 41
02		209	54.5	22.8	342	01.0	13.3	14 57.2	6.8	54.4	30	17 07	17 33	18 03	08 38	09 20	09 59	10 36
03		224	54.1	22.7	356	33.3	13.4	14 50.4	6.9	54.4	20	17 28	17 52	18 19	08 20	09 05	09 47	10 26
04		239	53.8	22.6	11	05.7	13.4	14 43.5	7.0	54.4	N 10	17 46	18 09	18 36	08 05	08 52	09 36	10 17
05		254	53.5	22.5	25	38.1	13.5	14 36.5	7.0	54.4	0	18 04	18 26	18 53	07 51	08 39	09 25	10 09
06		269	53.2	S23 22.5	40	10.6	13.6	N14 29.5	7.1	54.4	S 10	18 21	18 44	19 12	07 37	08 26	09 15	10 01
07		284	52.9	22.4	54	43.2	13.5	14 22.4	7.2	54.3	20	18 40	19 05	19 34	07 21	08 13	09 03	09 53
08		299	52.6	22.3	69	15.7	13.7	14 15.2	7.2	54.3	30	19 02	19 30	20 03	07 04	07 57	08 50	09 43
09		314	52.3	22.2	83	48.4	13.6	14 08.0	7.3	54.3	35	19 15	19 45	20 22	06 54	07 48	08 43	09 37
10		329	52.0	22.1	98	21.0	13.7	14 00.7	7.3	54.3	40	19 30	20 03	20 45	06 42	07 38	08 34	09 31
11		344	51.7	22.0	112	53.7	13.8	13 53.4	7.4	54.3	45	19 48	20 26	21 15	06 28	07 26	08 24	09 23
12		359	51.4	S23 22.0	127	26.5	13.8	N13 46.0	7.4	54.3	S 50	20 11	20 55	22 01	06 12	07 11	08 12	09 14
13		14	51.1	21.9	141	59.3	13.8	13 38.6	7.5	54.3	52	20 22	21 11	22 28	06 04	07 04	08 07	09 10
14		29	50.7	21.8	156	32.1	13.9	13 31.1	7.6	54.3	54	20 34	21 28	23 15	05 55	06 56	08 00	09 05
15		44	50.4	21.7	171	05.0	13.9	13 23.5	7.6	54.3	56	20 48	21 51	///	05 45	0		

		ARIES		VENUS -3.4		MARS +1.5		JUPITER -1.6		SATURN +0.8		STARS			
G.M.T.		G.H.A.	G.H.A.	Dec.	G.H.A.	Dec.	G.H.A.	Dec.	G.H.A.	Dec.	G.H.A.	Dec.	Name	S.H.A.	Dec.
d	h	°	°	°	°	°	°	°	°	°	°	°		°	°
WEDNESDAY	27 00	95 14.2	187 59.2	S 23 26.5	183 22.6	S 24 08.7	143 15.2	S 18 32.9	153 54.6	S 20 39.2	Acamar	315 47.6	S 40 27.7		
	01	110 16.7	202 58.2	26.7	198 23.0	08.7	158 17.1	32.8	168 56.7	39.1	Achernar	335 55.6	S 57 26.2		
	02	125 19.1	217 57.3	26.8	213 23.4	08.7	173 19.0	32.6	183 58.9	39.1	Acrux	173 52.8	S 62 52.9		
	03	140 21.6	232 56.3	.. 27.0	228 23.8	.. 08.7	188 20.9	.. 32.5	199 01.1	.. 39.0	Adhara	255 42.8	S 28 55.2		
	04	155 24.1	247 55.4	27.2	243 24.2	08.7	203 22.8	32.3	214 03.2	39.0	Aldebaran	291 33.8	N 16 25.9		
	05	170 26.5	262 54.4	27.3	258 24.6	08.7	218 24.7	32.2	229 05.4	38.9					
	06	185 29.0	277 53.4	S 23 27.5	273 25.0	S 24 08.7	233 26.6	S 18 32.0	244 07.6	S 20 38.9	Alioth	166 55.0	N 56 09.8		
	07	200 31.5	292 52.5	27.6	288 25.4	08.6	248 28.5	31.9	259 09.8	38.8	Alkaid	153 29.8	N 49 30.0		
	08	215 33.9	307 51.5	27.8	303 25.8	08.6	263 30.4	31.8	274 11.9	38.7	Al Na'ir	28 32.9	S 47 09.9		
	09	230 36.4	322 50.5	.. 27.9	318 26.2	.. 08.6	278 32.4	.. 31.6	289 14.1	.. 38.7	Alnilam	276 25.6	S 1 13.6		
	10	245 38.9	337 49.6	.. 28.1	333 26.6	08.6	293 34.3	31.5	304 16.3	38.6	Alphard	218 34.1	S 8 29.6		
	11	260 41.3	352 48.6	28.2	348 27.0	08.6	308 36.2	31.3	319 18.4	38.6					
	12	275 43.8	7 47.7	S 23 28.4	3 27.4	S 24 08.6	323 38.1	S 18 31.2	334 20.6	S 20 38.5	Alphecca	126 44.3	N 26 50.5		
	13	290 46.2	22 46.7	28.5	18 27.8	08.6	338 40.0	31.0	349 22.8	38.5	Alpheratz	358 23.9	N 28 52.9		
	14	305 48.7	37 45.7	28.7	33 28.2	08.6	353 41.9	30.9	4 24.9	38.4	Altair	62 46.6	N 8 46.1		
	15	320 51.2	52 44.8	.. 28.8	48 28.6	.. 08.6	8 43.8	.. 30.7	19 27.1	.. 38.3	Ankaa	353 54.2	S 42 31.0		
	16	335 53.6	67 43.8	28.9	63 29.0	08.6	23 45.7	30.6	34 29.3	38.3	Antares	113 14.4	S 26 20.7		
17	350 56.1	82 42.8	29.1	78 29.4	08.6	38 47.7	30.5	49 31.5	38.2						
THURSDAY	18	5 58.6	97 41.9	S 23 29.2	93 29.8	S 24 08.5	53 49.6	S 18 30.3	64 33.6	S 20 38.2	Arcturus	146 31.5	N 19 22.8		
	19	21 01.0	112 40.9	29.4	108 30.2	08.5	68 51.5	30.2	79 35.8	38.1	Atria	108 51.8	S 68 57.4		
	20	36 03.5	127 39.9	29.5	123 30.6	08.5	83 53.4	30.0	94 38.0	38.1	Avior	234 33.3	S 59 23.1		
	21	51 06.0	142 39.0	.. 29.6	138 31.0	.. 08.5	98 55.3	.. 29.9	109 40.1	.. 38.0	Bellatrix	279 13.5	N 6 18.9		
	22	66 08.4	157 38.0	.. 29.8	153 31.4	08.5	113 57.2	29.7	124 42.3	38.0	Betelgeuse	271 43.1	N 7 23.9		
	23	81 10.9	172 37.1	29.9	168 31.8	08.5	128 59.1	29.6	139 44.5	37.9					
	28 00	96 13.4	187 36.1	S 23 30.0	183 32.2	S 24 08.5	144 01.0	S 18 29.4	154 46.6	S 20 37.8	Canopus	264 12.9	S 52 40.6		
	01	111 15.8	202 35.1	30.2	198 32.6	08.5	159 02.9	29.3	169 48.8	37.8	Capella	281 31.6	N 45 57.6		
	02	126 18.3	217 34.2	30.3	213 32.9	08.4	174 04.8	29.2	184 51.0	37.7	Deneb	49 58.4	N 45 08.8		
	03	141 20.7	232 33.2	.. 30.4	228 33.3	.. 08.4	189 06.8	.. 29.0	199 53.1	.. 37.7	Denebola	183 13.3	N 14 47.0		
	04	156 23.2	247 32.2	30.6	243 33.7	08.4	204 08.7	28.9	214 55.3	37.6	Diphda	349 34.9	S 18 11.9		
	05	171 25.7	262 31.3	30.7	258 34.1	08.4	219 10.6	28.7	229 57.5	37.6					
	06	186 28.1	277 30.3	S 23 30.8	273 34.5	S 24 08.4	234 12.5	S 18 28.6	244 59.7	S 20 37.5	Dubhe	194 39.2	N 61 57.1		
	07	201 30.6	292 29.3	30.9	288 34.9	08.4	249 14.4	28.4	260 01.8	37.5	Elnath	279 01.5	N 28 34.5		
	08	216 33.1	307 28.4	31.0	303 35.3	08.3	264 16.3	28.3	275 04.0	37.4	Eltanin	91 04.8	N 51 29.7		
	09	231 35.5	322 27.4	.. 31.2	318 35.7	.. 08.3	279 18.2	.. 28.1	290 06.2	.. 37.3	Enif	34 25.6	N 9 42.0		
	10	246 38.0	337 26.4	31.3	333 36.1	08.3	294 20.1	28.0	305 08.3	37.3	Fomalhaut	16 07.1	S 29 49.6		
11	261 40.5	352 25.5	31.4	348 36.5	08.3	309 22.0	27.8	320 10.5	37.2						
12	276 42.9	7 24.5	S 23 31.5	3 36.9	S 24 08.3	324 23.9	S 18 27.7	335 12.7	S 20 37.2	Gacrux	172 44.3	S 56 53.7			
13	291 45.4	22 23.5	31.6	18 37.3	08.2	339 25.8	27.6	350 14.8	37.1	Gienah	176 32.4	S 17 19.7			
14	306 47.8	37 22.6	31.7	33 37.7	08.2	354 27.8	27.4	5 17.0	37.1	Hadar	149 43.5	S 60 11.0			
15	321 50.3	52 21.6	.. 31.9	48 38.1	.. 08.2	9 29.7	.. 27.3	20 19.2	.. 37.0	Hamal	328 44.6	N 23 17.0			
16	336 52.8	67 20.6	32.0	63 38.5	08.2	24 31.6	27.1	35 21.3	36.9	Kaus Aust.	84 35.9	S 34 24.2			
17	351 55.2	82 19.7	32.1	78 38.9	08.2	39 33.5	27.0	50 23.5	36.9						
FRIDAY	18	6 57.7	97 18.7	S 23 32.2	93 39.3	S 24 08.1	54 35.4	S 18 26.8	65 25.7	S 20 36.8	Kochab	137 19.2	N 74 18.5		
	19	22 00.2	112 17.7	32.3	108 39.7	08.1	69 37.3	26.7	80 27.9	36.8	Markab	14 17.3	N 15 00.1		
	20	37 02.6	127 16.8	32.4	123 40.1	08.1	84 39.2	26.5	95 30.0	36.7	Menkar	314 55.6	N 3 56.4		
	21	52 05.1	142 15.8	.. 32.5	138 40.5	.. 08.1	99 41.1	.. 26.4	110 32.2	.. 36.7	Menkent	148 53.7	S 36 10.7		
	22	67 07.6	157 14.8	32.6	153 40.9	08.0	114 43.0	26.2	125 34.4	36.6	Miaplacidus	221 47.2	S 69 33.4		
	23	82 10.0	172 13.9	32.7	168 41.3	08.0	129 44.9	26.1	140 36.5	36.6					
	29 00	97 12.5	187 12.9	S 23 32.8	183 41.7	S 24 08.0	144 46.8	S 18 26.0	155 38.7	S 20 36.5	Mirfak	309 35.8	N 49 43.9		
	01	112 15.0	202 11.9	32.9	198 42.1	08.0	159 48.7	25.8	170 40.9	36.4	Nunki	76 47.0	S 26 20.7		
	02	127 17.4	217 11.0	33.0	213 42.5	07.9	174 50.7	25.7	185 43.0	36.4	Peacock	54 21.1	S 56 51.6		
	03	142 19.9	232 10.0	.. 33.1	228 42.9	.. 07.9	189 52.6	.. 25.5	200 45.2	.. 36.3	Pollux	244 15.0	N 28 07.0		
	04	157 22.3	247 09.0	33.2	243 43.3	07.9	204 54.5	25.4	215 47.4	36.3	Procyon	245 40.2	N 5 19.3		
	05	172 24.8	262 08.1	33.3	258 43.7	07.9	219 56.4	25.2	230 49.5	36.2					
	06	187 27.3	277 07.1	S 23 33.4	273 44.1	S 24 07.8	234 58.3	S 18 25.1	245 51.7	S 20 36.2	Rasalhague	96 43.0	N 12 35.3		
	07	202 29.7	292 06.1	33.5	288 44.5	07.8	250 00.2	24.9	260 53.9	36.1	Regulus	208 24.8	N 12 09.2		
	08	217 32.2	307 05.2	33.6	303 44.9	07.8	265 02.1	24.8	275 56.0	36.0	Rigel	281 49.2	S 8 14.8		
	09	232 34.7	322 04.2	.. 33.7	318 45.3	.. 07.7	280 04.0	.. 24.6	290 58.2	.. 36.0	Rigel Kent.	140 45.3	S 60 40.3		
	10	247 37.1	337 03.2	33.8	333 45.6	07.7	295 05.9	24.5	306 00.4	35.9	Sabik	102 57.6	S 15 40.6		
11	262 39.6	352 02.3	33.8	348 46.0	07.7	310 07.8	24.3	321 02.5	35.9						
12	277 42.1	7 01.3	S 23 33.9	3 46.4	S 24 07.7	325 09.7	S 18 24.2	336 04.7	S 20 35.8	Schedar	350 24.9	N 56 19.9			
13	292 44.5	22 00.3	34.0	18 46.8	07.6	340 11.6	24.1	351 06.9	35.8	Shaula	97 15.3	S 37 04.5			
14	307 47.0	36 59.4	34.1	33 47.2	07.6	355 13.5	23.9	6 09.1	35.7	Sirius	259 07.7	S 16 39.9			
15	322 49.4	51 58.4	.. 34.2	48 47.6	.. 07.6	10 15.4	.. 23.8	21 11.2	.. 35.7	Spica	159 12.4	N 10 57.6			
16	337 51.9	66 57.4	34.3	63 48.0	07.5	25 17.4	23.6	36 13.4	35.6	Suhail	223 20.7	S 43 16.6			
17	352 54.4	81 56.5	34.3	78 48.4	07.5	40 19.3	23.5	51 15.6	35.5						
SATURDAY	18	7 56.8	96 55.5	S 23 34.4	93 48.8	S 24 07.5	55 21.2	S 18 23.3	66 17.7	S 20 35.5	Vega	81 05.8	N 38 45.0		
	19	22 59.3	111 54.5	34.5	108 49.2	07.4	70 23.1	23.2	81 19.9	35.4	Zuben'ubi	137 48.8	S 15 52.9		
	20	38 01.8	126 53.6	34.6	123 49.6	07.4	85 25.0	23.0	96 22.1	35.4					
	21	53 04.2	141 52.6	.. 34.6	138 50.0	.. 07.4	100 26.9	.. 22.9	111 24.2	.. 35.3		S.H.A.	Mer. Pass.		
	22	68 06.7	156 51.6	34.7	153 50.4	07.3	115 28.8	22.7	126 26.4	35.3	Venus	91 22.7	11 30		
	23	83 09.2	171 50.6	34.8	168 50.8	07.3	130 30.7	22.6	141 28.6	35.2	Mars	87 18.8	11 46		
											Jupiter	47 47.6	14 22		
											Saturn	58 33.2	13 39		

G.M.T.	SUN				MOON				Lat.	Twilight		Sun-rise	Moonrise								
	G.H.A.		Dec.	d	H.P.	Naut.	Civil	27		28	29		30								
	°	'																			
27 00	179	47.7	S 23	20.9	302	02.7	14.3	N 12	13.2	8.1	54.2	■	20	28	22	06	23	44	25	22	
01	194	47.4	20.8	316	36.0	14.3	12	05.1	8.1	54.2	■	20	43	22	14	23	45	25	17		
02	209	47.0	20.7	331	09.3	14.3	11	57.0	8.1	54.2	■	20	54	22	20	23	46	25	13		
03	224	46.7	20.6	345	42.6	14.4	11	48.9	8.2	54.2	10 34	21	04	22	25	23	47	25	10		
04	239	46.4	20.5	0	16.0	14.4	11	40.7	8.3	54.2	09 53	21	12	22	30	23	48	25	07		
05	254	46.1	20.4	14	49.4	14.5	11	32.4	8.3	54.2	09 25	21	19	22	33	23	49	25	05		
06	269	45.8	S 23	20.3	29	22.9	14.5	N 11	24.1	8.4	54.2	08 46	21	30	22	40	23	50	25	01	
07	284	45.5	20.2	43	56.4	14.5	11	15.7	8.3	54.2	08 32	21	35	22	42	23	50	24	55		
08	299	45.2	20.1	58	29.9	14.6	11	07.4	8.5	54.2	08 19	21	39	22	45	23	51	24	58		
09	314	44.9	20.0	73	03.5	14.5	10	58.9	8.5	54.2	08 08	21	43	22	47	23	51	24	56		
10	329	44.6	19.9	87	37.0	14.7	10	50.4	8.5	54.2	07 58	21	46	22	49	23	51	24	55		
11	344	44.3	19.8	102	10.7	14.6	10	41.9	8.6	54.2	07 45	21	54	22	53	23	52	24	53		
12	359	44.0	S 23	19.7	116	44.3	14.7	N 10	33.3	8.6	54.2	07 21	22	00	22	56	23	53	24	50	
13	14	43.7	19.6	131	18.0	14.7	10	24.7	8.6	54.2	07 07	22	05	22	59	23	54	24	49		
14	29	43.4	19.4	145	51.7	14.8	10	16.1	8.7	54.2	06 54	22	10	23	02	23	54	24	47		
15	44	43.1	19.3	160	25.5	14.7	10	07.4	8.7	54.2	06 43	22	18	23	06	23	55	24	44		
16	59	42.7	19.2	174	59.2	14.8	9	58.7	8.8	54.2	06 34	22	25	23	10	23	56	24	42		
17	74	42.4	19.1	189	33.0	14.9	9	49.9	8.8	54.2	06 27	22	32	23	14	23	57	24	39		
18	89	42.1	S 23	19.0	204	06.9	14.8	N	9	41.1	8.9	54.2	06 21	22	38	23	18	23	57	24	37
19	104	41.8	18.9	218	40.7	14.9	9	32.2	8.8	54.2	06 17	22	45	23	22	23	58	24	35		
20	119	41.5	18.8	233	14.6	14.9	9	23.4	9.0	54.2	06 14	23	00	23	27	23	59	24	32		
21	134	41.2	18.7	247	48.5	15.0	9	14.4	8.9	54.2	06 11	23	07	23	29	24	00	00	00		
22	149	40.9	18.6	262	22.5	14.9	9	05.5	9.0	54.2	06 08	23	03	23	32	24	00	00	00		
23	164	40.6	18.4	276	56.4	15.0	8	56.5	9.1	54.2	06 05	23	09	23	35	24	01	00	01		
28 00	179	40.3	S 23	18.3	291	30.4	15.0	N	8	47.4	9.0	54.2	06 02	23	16	23	39	24	02	00	02
01	194	40.0	18.2	306	04.4	15.1	8	38.4	9.1	54.2	06 00	23	19	23	41	24	02	00	02		
02	209	39.7	18.1	320	38.5	15.0	8	29.3	9.2	54.2	05 58	23	23	23	43	24	03	00	03		
03	224	39.4	18.0	335	12.5	15.1	8	20.1	9.1	54.2	05 56	23	27	23	46	24	03	00	03		
04	239	39.1	17.9	349	46.6	15.1	8	11.0	9.2	54.2	05 54	23	31	23	48	24	04	00	04		
05	254	38.8	17.7	4	20.7	15.1	8	01.8	9.3	54.2	05 52	23	36	23	51	24	04	00	04		
06	269	38.4	S 23	17.6	18	54.8	15.2	N	7	52.5	9.2	54.2	05 50	24	00	24	05	12	10		
07	284	38.1	17.5	33	29.0	15.1	7	43.3	9.3	54.2	05 48	24	03	24	08	12	08	12	05		
08	299	37.8	17.4	48	03.1	15.2	7	34.0	9.4	54.2	05 46	24	06	24	11	12	08	12	05		
09	314	37.5	17.3	62	37.3	15.2	7	24.6	9.3	54.2	05 44	24	09	24	14	12	08	12	05		
10	329	37.2	17.1	77	11.5	15.2	7	15.3	9.4	54.2	05 42	24	11	24	16	12	08	12	05		
11	344	36.9	17.0	91	45.7	15.3	7	05.9	9.4	54.2	05 40	24	14	24	19	12	08	12	05		
12	359	36.6	S 23	16.9	106	20.0	15.2	N	6	56.5	9.5	54.2	05 38	24	17	24	22	12	08		
13	14	36.3	16.8	120	54.2	15.3	6	47.0	9.5	54.2	05 36	24	20	24	25	12	08	12	05		
14	29	36.0	16.6	135	28.5	15.2	6	37.5	9.5	54.2	05 34	24	23	24	28	12	08	12	05		
15	44	35.7	16.5	150	02.7	15.3	6	28.0	9.5	54.2	05 32	24	26	24	31	12	08	12	05		
16	59	35.4	16.4	164	37.0	15.3	6	18.5	9.6	54.2	05 30	24	29	24	34	12	08	12	05		
17	74	35.1	16.2	179	11.3	15.3	6	08.9	9.5	54.2	05 28	24	32	24	37	12	08	12	05		
18	89	34.8	S 23	16.1	193	45.6	15.4	N	5	59.4	9.7	54.2	05 26	24	35	24	40	12	08		
19	104	34.5	16.0	208	20.0	15.3	5	49.7	9.6	54.2	05 24	24	38	24	43	12	08	12	05		
20	119	34.2	15.9	222	54.3	15.3	5	40.1	9.6	54.3	05 22	24	41	24	46	12	08	12	05		
21	134	33.9	15.7	237	28.6	15.4	5	30.5	9.7	54.3	05 20	24	44	24	49	12	08	12	05		
22	149	33.6	15.6	252	03.0	15.3	5	20.8	9.7	54.3	05 18	24	47	24	52	12	08	12	05		
23	164	33.2	15.4	266	37.3	15.4	5	11.1	9.8	54.3	05 16	24	50	24	55	12	08	12	05		
29 00	179	32.9	S 23	15.3	281	11.7	15.4	N	5	01.3	9.7	54.3	05 14	24	53	24	58	12	08		
01	194	32.6	15.2	295	46.1	15.3	4	51.6	9.8	54.3	05 12	24	56	24	01	12	08	12	05		
02	209	32.3	15.0	310	20.4	15.4	4	41.8	9.8	54.3	05 10	24	59	24	04	12	08	12	05		
03	224	32.0	14.9	324	54.8	15.4	4	32.0	9.8	54.3	05 08	24	02	24	07	12	08	12	05		
04	239	31.7	14.8	339	29.2	15.4	4	22.2	9.9	54.3	05 06	24	05	24	10	12	08	12	05		
05	254	31.4	14.6	354	03.6	15.4	4	12.3	9.8	54.3	05 04	24	08	24	13	12	08	12	05		
06	269	31.1	S 23	14.5	8	30.0	15.4	N	4	02.5	9.9	54.3	05 02	24	11	24	16	12	05		
07	284	30.8	14.3	23	12.4	15.4	3	52.6	9.9	54.4	05 00	24	14	24	19	12	05	12	05		
08	299	30.5	14.2	37	46.8	15.4	3	42.7	9.9	54.4	04 58	24	17	24	22	12	05	12	05		
09	314	30.2	14.1	52	21.2	15.4	3	32.8	9.9	54.4	04 56	24	20	24	25	12	05	12	05		
10	329	29.9	13.9	66	55.6	15.4	3	22.9	10.0	54.4	04 54	24	23	24	28	12	05	12	05		
11	344	29.6	13.8	81	30.0	15.4	3	12.9	10.0	54.4	04 52	24	26	24	31	12	05	12	05		
12	359	29.3	S 23	13.6	96	04.4	15.4	N	3	02.9	9.9	54.4	04 50	24	29	24	34	12	05		
13	14	29.0	13.5	110	38.8	15.3	2	53.0	10.0	54.4	04 48	24	32	24	37	12	05	12	05		
14	29	28.7	13.3	125	13.1	15.4	2	43.0	10.1	54.4	04 46	24	35	24	40	12	05	12	05		
15	44	28.4	13.2	139	47.5	15.4	2	32.9	10.1	54.4	04 44	24	38	24	43	12	05	12	05		
16	59	28.1	13.1	154	21.9	15.4	2	22.9	10.0	54.5	04 42	24	41	24	46	12	05	12	05		
17	74	27.8	12.9	168	56.3	15.3	2	12.9	10.1	54.5	04 40	24	44	24	49	12	05	12	05		
18	89	27.5	S 23	12.8	183	30.6	15.4	N	2	02.8	10.1	54.5	04 38	24							

	ARIES	VENUS -3-4		MARS +1-5		JUPITER -1-6		SATURN +0-8		STARS										
G.M.T.	G.H.A.	G.H.A.	Dec.	G.H.A.	Dec.	G.H.A.	Dec.	G.H.A.	Dec.	Name	S.H.A.	Dec.								
d h																				
30	00	98 11.6	186 49.7 S 23 34.9	183 51.2 S 24 07.2	145 32.6 S 18 22.4	156 30.7 S 20 35.1	Acamar	315 47.7 S 40 27.7												
	01	113 14.1	201 48.7 34.9	198 51.6 07.2	160 34.5 22.3	171 32.9 35.1	Achernar	335 55.6 S 57 26.2												
	02	128 16.6	216 47.7 35.0	213 52.0 07.2	175 36.4 22.1	186 35.1 35.0	Acrux	173 52.8 S 62 52.9												
	03	143 19.0	231 46.8 . . 35.1	228 52.4 . . 07.1	190 38.3 . . 22.0	201 37.2 . . 35.0	Adhara	255 42.8 S 28 55.3												
	04	158 21.5	246 45.8 35.1	243 52.7 07.1	205 40.2 21.9	216 39.4 34.9	Aldebaran	291 33.8 N 16 25.9												
SATURDAY	05	173 23.9	261 44.8 35.2	258 53.1 07.1	220 42.1 21.7	231 41.6 34.9														
	06	188 26.4	276 43.9 S 23 35.3	273 53.5 S 24 07.0	235 44.0 S 18 21.6	246 43.7 S 20 34.8	Alioth	166 54.9 N 56 09.8												
	07	203 28.9	291 42.9 35.3	288 53.9 07.0	250 45.9 21.4	261 45.9 34.7	Alkaid	153 29.8 N 49 30.0												
	08	218 31.3	306 41.9 35.4	303 54.3 06.9	265 47.8 21.3	276 48.1 34.7	Al Na'ir	28 32.9 S 47 09.0												
	09	233 33.8	321 40.9 . . 35.4	318 54.7 . . 06.9	280 49.7 . . 21.1	291 50.2 . . 34.6	Alnilam	276 25.6 S 1 13.6												
	10	248 36.3	336 40.0 35.5	333 55.1 06.9	295 51.7 21.0	306 52.4 34.6	Alphard	218 34.1 S 8 29.6												
	11	263 38.7	351 39.0 35.6	348 55.5 06.8	310 53.6 20.8	321 54.6 34.5														
	12	278 41.2	6 38.0 S 23 35.6	3 55.9 S 24 06.8	325 55.5 S 18 20.7	336 56.7 S 20 34.5	Alphecca	126 44.3 N 26 50.5												
	13	293 43.7	21 37.1 35.7	18 56.3 06.7	340 57.4 20.5	351 58.9 34.4	Alpheratz	358 23.9 N 28 52.9												
	14	308 46.1	36 36.1 35.7	33 56.7 06.7	355 59.3 20.4	7 01.1 34.3	Altair	62 46.5 N 8 46.1												
	15	323 48.6	51 35.1 . . 35.8	48 57.1 . . 06.6	11 01.2 . . 20.2	22 03.2 . . 34.3	Ankaa	353 54.2 S 42 31.0												
	16	338 51.1	66 34.2 35.8	63 57.5 06.6	26 03.1 20.1	37 05.4 34.2	Antares	113 14.4 S 26 20.7												
	17	353 53.5	81 33.2 35.9	78 57.9 06.6	41 05.0 19.9	52 07.6 34.2														
	18	8 56.0	96 32.2 S 23 35.9	93 58.3 S 24 06.5	56 06.9 S 18 19.8	67 09.7 S 20 34.1	Arcturus	146 31.4 N 19 22.8												
	19	23 58.4	111 31.2 36.0	108 58.7 06.5	71 08.8 19.6	82 11.9 34.1	Atria	108 51.7 S 68 57.3												
	20	39 00.9	126 30.3 36.0	123 59.1 06.4	86 10.7 19.5	97 14.1 34.0	Avior	234 33.3 S 59 23.1												
	21	54 03.4	141 29.3 . . 36.1	138 59.4 . . 06.4	101 12.6 . . 19.3	112 16.2 . . 33.9	Bellatrix	279 13.5 N 6 18.8												
	22	69 05.8	156 28.3 36.1	153 59.8 06.3	116 14.5 19.2	127 18.4 33.9	Betelgeuse	271 43.1 N 7 23.9												
23	84 08.3	171 27.4 36.1	169 00.2 06.3	131 16.4 19.0	142 20.5 33.8															
31	00	99 10.8	186 26.4 S 23 36.2	184 00.6 S 24 06.2	146 18.3 S 18 18.9	157 22.7 S 20 33.8	Canopus	264 12.9 S 52 40.6												
	01	114 13.2	201 25.4 36.2	199 01.0 06.2	161 20.2 18.7	172 24.9 33.7	Capella	281 31.6 N 45 57.6												
	02	129 15.7	216 24.5 36.3	214 01.4 06.1	176 22.1 18.6	187 27.0 33.7	Deneb	49 58.4 N 45 08.8												
	03	144 18.2	231 23.5 . . 36.3	229 01.8 . . 06.1	191 24.0 . . 18.4	202 29.2 . . 33.6	Denebola	183 13.3 N 14 47.0												
	04	159 20.6	246 22.5 36.3	244 02.2 06.0	206 25.9 18.3	217 31.4 33.5	Diphda	349 35.0 S 18 11.9												
SUNDAY	05	174 23.1	261 21.5 36.4	259 02.6 06.0	221 27.8 18.1	232 33.5 33.5														
	06	189 25.5	276 20.6 S 23 36.4	274 03.0 S 24 06.0	236 29.7 S 18 18.0	247 35.7 S 20 33.4	Dubhe	194 39.2 N 61 57.1												
	07	204 28.0	291 19.6 36.4	289 03.4 05.9	251 31.6 17.9	262 37.9 33.4	Elnath	279 01.5 N 28 34.5												
	08	219 30.5	306 18.6 36.5	304 03.8 05.8	266 33.5 17.7	277 40.0 33.3	Eltanin	91 04.8 N 51 29.6												
	09	234 32.9	321 17.7 . . 36.5	319 04.2 . . 05.8	281 35.4 . . 17.6	292 42.2 . . 33.3	Enif	34 25.6 N 9 42.0												
	10	249 35.4	336 16.7 36.5	334 04.6 05.7	296 37.4 17.4	307 44.4 33.2	Fomalhaut	16 07.1 S 29 49.6												
	11	264 37.9	351 15.7 36.5	349 05.0 05.7	311 39.3 17.3	322 46.5 33.1														
	12	279 40.3	6 14.7 S 23 36.6	4 05.3 S 24 05.6	326 41.2 S 18 17.1	337 48.7 S 20 33.1	Gacrux	172 44.3 S 56 53.7												
	13	294 42.8	21 13.8 36.6	19 05.7 05.6	341 43.1 17.0	352 50.9 33.0	Gienah	176 32.4 S 17 19.7												
	14	309 45.3	36 12.8 36.6	34 06.1 05.5	356 45.0 16.8	7 53.0 33.0	Hadar	149 43.4 S 60 11.0												
	15	324 47.7	51 11.8 . . 36.6	49 06.5 . . 05.5	11 46.9 . . 16.7	22 55.2 . . 32.9	Hamal	328 44.6 N 23 17.0												
	16	339 50.2	66 10.9 36.7	64 06.9 05.4	26 48.8 16.5	37 57.4 32.8	Kaus Aust.	84 35.9 S 34 24.1												
	17	354 52.7	81 09.9 36.7	79 07.3 05.4	41 50.7 16.4	52 59.5 32.8														
	18	9 55.1	96 08.9 S 23 36.7	94 07.7 S 24 05.3	56 52.6 S 18 16.2	68 01.7 S 20 32.7	Kochab	137 19.1 N 74 18.5												
	19	24 57.6	111 08.0 36.7	109 08.1 05.3	71 54.5 16.1	83 03.9 32.7	Markab	14 17.3 N 15 00.0												
	20	40 00.0	126 07.0 36.7	124 08.5 05.2	86 56.4 15.9	98 06.0 32.6	Menkar	314 55.6 N 3 56.4												
	21	55 02.5	141 06.0 . . 36.7	139 08.9 . . 05.1	101 58.3 . . 15.8	113 08.2 . . 32.6	Menkent	148 53.7 S 36 10.7												
	22	70 05.0	156 05.0 36.8	154 09.3 05.1	117 00.2 15.6	128 10.4 32.5	Miaplacidus	221 47.1 S 69 33.4												
23	85 07.4	171 04.1 36.8	169 09.7 05.0	132 02.1 15.5	143 12.5 32.4															
1	00	100 09.9	186 03.1 S 23 36.8	184 10.1 S 24 05.0	147 04.0 S 18 15.3	158 14.7 S 20 32.4	Mirfak	309 35.8 N 49 43.7												
	01	115 12.4	201 02.1 36.8	199 10.4 04.9	162 05.9 15.2	173 16.9 32.3	Nunki	76 47.0 S 26 20.6												
	02	130 14.8	216 01.2 36.8	214 10.8 04.8	177 07.8 15.0	188 19.0 32.3	Peacock	54 21.1 S 56 51.6												
	03	145 17.3	231 00.2 . . 36.8	229 11.2 . . 04.8	192 09.7 . . 14.9	203 21.2 . . 32.2	Pollux	244 15.0 N 28 07.0												
	04	160 19.8	245 59.2 36.8	244 11.6 04.7	207 11.6 14.7	218 23.4 32.2	Procyon	245 40.2 N 5 19.3												
MONDAY	05	175 22.2	260 58.2 36.8	259 12.0 04.7	222 13.5 14.6	233 25.5 32.1														
	06	190 24.7	275 57.3 S 23 36.8	274 12.4 S 24 04.6	237 15.4 S 18 14.4	248 27.7 S 20 32.0	Rasalhague	96 42.9 N 12 35.3												
	07	205 27.2	290 56.3 36.8	289 12.8 04.5	252 17.3 14.3	263 29.8 32.0	Regulus	208 24.7 N 12 09.1												
	08	220 29.6	305 55.3 36.8	304 13.2 04.5	267 19.2 14.1	278 32.0 31.9	Rigel	281 49.2 S 8 14.8												
	09	235 32.1	320 54.4 . . 36.8	319 13.6 . . 04.4	282 21.1 . . 14.0	293 34.2 . . 31.9	Rigel Kent.	140 45.3 S 60 40.3												
	10	250 34.5	335 53.4 36.8	334 14.0 04.4	297 23.0 13.8	308 36.3 31.8	Sabik	102 57.6 S 15 40.6												
	11	265 37.0	350 52.4 36.8	349 14.4 04.3	312 24.9 13.7	323 38.5 31.8														
	12	280 39.5	5 51.4 S 23 36.8	4 14.7 S 24 04.2	327 26.8 S 18 13.5	338 40.7 S 20 31.7	Schedar	350 24.9 N 56 19.9												
	13	295 41.9	20 50.5 36.8	19 15.1 04.2	342 28.7 13.4	353 42.8 31.6	Shaula	97 15.3 S 37 04.5												
	14	310 44.4	35 49.5 36.8	34 15.5 04.1	357 30.6 13.2	8 45.0 31.6	Sirius	259 07.7 S 16 39.9												
	15	325 46.9	50 48.5 . . 36.8	49 15.9 . . 04.0	12 32.5 . . 13.1	23 47.2 . . 31.5	Spica	159 12.4 S 10 57.6												
	16	340 49.3	65 47.6 36.8	64 16.3 04.0	27 34.4 12.9	38 49.3 31.5	Suhail	223 20.7 S 43 16.6												
	17	355 51.8	80 46.6 36.7	79 16.7 03.9	42 36.3 12.8	53 51.5 31.4														
	18	10 54.3	95 45.6 S 23 36.7	94 17.1 S 24 03.8	57 38.2 S 18 12.6	68 53.7 S 20 31.3	Vega	81 05.8 N 38 44.9												
	19	25 56.7	110 44.7 36.7	109 17.5 03.8	72 40.1 12.5	83 55.8 31.3	Zuben'ubi	137 48.8 S 15 52.9												
	20	40 59.2	125 43.7 36.7	124 17.9 03.7	87 42.0 12.3	98 58.0 31.2														
	21	56 01.7	140 42.7 . . 36.7	139 18.3 . . 03.6	102 43.9 . . 12.2	114 00.1 . . 31.2														
	22	71 04.1	155 41.7 36.7	154 18.7 03.6	117 45.8 12.0	129 02.3 31.1	Venus	S.H.A. 87 15.6 Mer. Pass. 11 35												
23	86 06.6	170 40.8 36.6	169 19.0 03.5	132 47.7 11.9	144 04.5 31.1	Mars	84 49.8 11 44													
Mer. Pass. 17 20.4											v -1.0	d 0.0	v 0.4	d 0.1	v 1.9	d 0.1	v 2.2	d 0.1	Jupiter	47 07.5 14 13
																			Saturn	58 11.9 13 29

G.M.T.	SUN				MOON				Lat.	Twilight		Sun-rise	Moonrise					
	G.H.A.		Dec.		G.H.A.		Dec.			Naut.	Civil		30		31		1	2
	d	h	m	s	d	m	s	h			m	m	m	m	m	m		
SATURDAY	00	179	25.6	S 23	11.8	270	56.6	15.3	N	1 02.2	10.1	54.6	25 22	01 22	03 04	04 55		
	01	194	25.3		11.7	285	30.9	15.3		0 52.1	10.2	54.6	25 17	01 17	02 53	04 33		
	02	209	25.0		11.5	300	05.2	15.2		0 41.9	10.1	54.6	25 13	01 13	02 43	04 17		
	03	224	24.7		11.4	314	39.4	15.3		0 31.8	10.2	54.6	25 10	01 10	02 35	04 04		
	04	239	24.4		11.2	329	13.7	15.2		0 21.6	10.2	54.6	25 07	01 07	02 28	03 53		
	05	254	24.1		11.1	343	47.9	15.2		0 11.4	10.1	54.7	25 05	01 05	02 23	03 43		
	06	269	23.8	S 23	10.9	358	22.1	15.2	N	0 01.3	10.2	54.7	25 03	01 03	02 18	03 35		
	07	284	23.5		10.7	12	56.3	15.2	S	0 08.9	10.2	54.7	25 01	01 01	02 14	03 28		
	08	299	23.2		10.6	27	30.5	15.1		0 19.1	10.2	54.7	24 59	00 59	02 10	03 22		
	09	314	22.9		10.4	42	04.6	15.2		0 29.3	10.2	54.7	24 56	00 56	02 03	03 12		
	10	329	22.6		10.3	56	38.8	15.1		0 39.5	10.2	54.7	24 55	00 55	02 01	03 08		
	11	344	22.3		10.1	71	12.9	15.1		0 49.7	10.2	54.8	24 53	00 53	01 54	02 58		
	12	359	22.0	S 23	09.9	85	47.0	15.0	S	0 59.9	10.2	54.8	24 50	00 50	01 49	02 50		
	13	14	21.7		09.8	100	21.0	15.1		1 10.1	10.3	54.8	24 49	00 49	01 45	02 43		
	14	29	21.4		09.6	114	55.1	15.0		1 20.4	10.2	54.8	24 47	00 47	01 41	02 38		
	15	44	21.1		09.4	129	29.1	15.0		1 30.6	10.2	54.8	24 44	00 44	01 35	02 27		
	16	59	20.8		09.3	144	03.1	14.9		1 40.8	10.2	54.9	24 42	00 42	01 29	02 18		
	17	74	20.5		09.1	158	37.0	15.0		1 51.0	10.2	54.9	24 39	00 39	01 23	02 10		
	18	89	20.2	S 23	08.9	173	11.0	14.9	S	2 01.2	10.3	54.9	24 37	00 37	01 18	02 02		
	19	104	19.9		08.8	187	44.9	14.9		2 11.5	10.2	54.9	24 35	00 35	01 12	01 53		
	20	119	19.6		08.6	202	18.8	14.8		2 21.7	10.2	54.9	24 32	00 32	01 06	01 43		
	21	134	19.3		08.4	216	52.6	14.9		2 31.9	10.2	55.0	24 30	00 30	01 02	01 37		
	22	149	19.0		08.3	231	26.5	14.7		2 42.1	10.2	55.0	24 28	00 28	00 58	01 31		
23	164	18.7		08.1	246	00.2	14.8		2 52.3	10.2	55.0	24 26	00 26	00 54	01 23			
SUNDAY	00	179	18.4	S 23	07.9	260	34.0	14.7	S	3 02.5	10.2	55.0	24 24	00 24	00 48	01 14		
	01	194	18.1		07.7	275	07.7	14.7		3 12.7	10.2	55.1	24 22	00 22	00 45	01 10		
	02	209	17.8		07.6	289	41.4	14.7		3 22.9	10.2	55.1	24 20	00 20	00 42	01 06		
	03	224	17.5		07.4	304	15.1	14.6		3 33.1	10.2	55.1	24 18	00 18	00 39	01 01		
	04	239	17.2		07.2	318	48.7	14.6		3 43.3	10.2	55.1	24 16	00 16	00 36	00 55		
	05	254	16.9		07.0	333	22.3	14.5		3 53.5	10.2	55.1	24 14	00 14	00 32	00 49		
	06	269	16.6	S 23	06.8	347	55.8	14.5	S	4 03.7	10.2	55.2	24 12	00 12	00 26	00 45		
	07	284	16.3		06.7	2	29.3	14.5		4 13.9	10.1	55.2	24 10	00 10	00 22	00 41		
	08	299	16.0		06.5	17	02.8	14.4		4 24.0	10.2	55.2	24 08	00 08	00 18	00 36		
	09	314	15.7		06.3	31	36.2	14.4		4 34.2	10.1	55.2	24 06	00 06	00 14	00 31		
	10	329	15.4		06.1	46	09.6	14.3		4 44.3	10.1	55.3	24 04	00 04	00 10	00 27		
	11	344	15.1		05.9	60	42.9	14.3		4 54.4	10.2	55.3	24 02	00 02	00 06	00 23		
	12	359	14.8	S 23	05.8	75	16.2	14.3	S	5 04.6	10.1	55.3	24 00	00 00	00 02	00 19		
	13	14	14.5		05.6	89	49.5	14.2		5 14.7	10.1	55.3	23 58	00 00	00 00	00 16		
	14	29	14.2		05.4	104	22.7	14.1		5 24.8	10.0	55.4	23 56	00 00	00 00	00 13		
	15	44	13.9		05.2	118	55.8	14.2		5 34.8	10.1	55.4	23 54	00 00	00 00	00 10		
	16	59	13.6		05.0	133	29.0	14.0		5 44.9	10.1	55.4	23 52	00 00	00 00	00 07		
	17	74	13.3		04.8	148	02.0	14.1		5 55.0	10.0	55.5	23 50	00 00	00 00	00 04		
	18	89	13.0	S 23	04.6	162	35.1	13.9	S	6 05.0	10.0	55.5	23 48	00 00	00 00	00 01		
	19	104	12.7		04.5	177	08.0	14.0		6 15.0	10.0	55.5	23 46	00 00	00 00	00 00		
	20	119	12.4		04.3	191	41.0	13.8		6 25.0	10.0	55.5	23 44	00 00	00 00	00 00		
	21	134	12.1		04.1	206	13.8	13.9		6 35.0	10.0	55.6	23 42	00 00	00 00	00 00		
	22	149	11.8		03.9	220	46.7	13.7		6 45.0	9.9	55.6	23 40	00 00	00 00	00 00		
23	164	11.5		03.7	235	19.4	13.7		6 54.9	10.0	55.6	23 38	00 00	00 00	00 00			
MONDAY	00	179	11.2	S 23	03.5	249	52.1	13.7	S	7 04.9	9.9	55.7	23 36	00 00	00 00	00 00		
	01	194	10.9		03.3	264	24.8	13.6		7 14.8	9.8	55.7	23 34	00 00	00 00	00 00		
	02	209	10.6		03.1	278	57.4	13.6		7 24.6	9.9	55.7	23 32	00 00	00 00	00 00		
	03	224	10.3		02.9	293	30.0	13.5		7 34.5	9.9	55.7	23 30	00 00	00 00	00 00		
	04	239	10.0		02.7	308	02.5	13.4		7 44.4	9.8	55.8	23 28	00 00	00 00	00 00		
	05	254	09.7		02.5	322	34.9	13.4		7 54.2	9.8	55.8	23 26	00 00	00 00	00 00		
	06	269	09.4	S 23	02.3	337	07.3	13.3	S	8 04.0	9.7	55.8	23 24	00 00	00 00	00 00		
	07	284	09.1		02.1	351	39.6	13.3		8 13.7	9.8	55.9	23 22	00 00	00 00	00 00		
	08	299	08.8		01.9	6	11.9	13.2		8 23.5	9.7	55.9	23 20	00 00	00 00	00 00		
	09	314	08.5		01.7	20	44.1	13.1		8 33.2	9.7	55.9	23 18	00 00	00 00	00 00		
	10	329	08.3		01.5	35	16.2	13.1		8 42.9	9.6	55.9	23 16	00 00	00 00	00 00		
	11	344	08.0		01.3	49	48.3	13.0		8 52.5	9.7	56.0	23 14	00 00	00 00	00 00		
	12	359	07.7	S 23	01.1	64	20.3	13.0	S	9 02.2	9.6	56.0	23 12	00 00	00 00	00 00		
	13	14	07.4		00.9	78	52.3	12.9		9 11.8	9.5	56.0	23 10	00 00	00 00	00 00		
	14	29	07.1		00.7	93	24.2	12.8		9 21.3	9.6	56.1	23 08	00 00	00 00	00 00		
	15	44	06.8		00.5	107	56.0	12.8		9 30.9	9.5	56.1	23 06	00 00	00 00	00 00		
	16	59	06.5		00.3	122	27.8	12.6		9 40.4	9.4	56.1	23 04	00 00	00 00	00 00		
	17	74	06.2		00.1	136	59.4	12.7		9 49.8	9.5	56.2	23 02	00 00	00 00	00 00		
	18	89	05.9	S 22	59.9	151	31.1	12.5	S	9 59.3	9.4	56.2	23 00	00 00	00 00	00 00		
	19	104	05.6		59.7	166	02.6	12.5		10 08.7	9.3	56.2	22 58	00 00	00 00	00 00		
	20	119	05.3		59.5	180	34.1	12.4		10 18.0	9.4	56.3	22 56	00 00	00 00	00 00		
	21	134	05.0		59.3	195	05.5	12.4		10 27.4	9.3	56.3	22 54	00 00	00 00	00 00		
	22	149	04.7		59.1	209	36.9	12.3		10 36.7	9.2	56.3	22 52	00 00	00 00	00 00		
23	164	04.4		58.8	224	08.2	12.2		10 45.9	9.2	56.4	22 50	00 00	00 00	00 00			
	S.D.	16.3	d	0.2	S.D.	14.9	15.1	15.3										

EXPLANATION

PRINCIPLE AND ARRANGEMENT

1. *Object.* The object of this Almanac is to provide, in a convenient form, the data required for the practice of astronomical navigation at sea.

2. *Principle.* The main contents of the Almanac consist of data from which the *Greenwich Hour Angle* (G.H.A.) and the *Declination* (Dec.) of all the bodies used for navigation can be obtained for any instant of *Greenwich Mean Time* (G.M.T.). The *Local Hour Angle* (L.H.A.) can then be obtained by means of the formula :

$$\text{L.H.A.} = \text{G.H.A.} \begin{array}{l} - \text{west} \\ + \text{east} \end{array} \text{longitude}$$

The remaining data consist of: times of rising and setting of the Sun and Moon, and times of twilight; miscellaneous calendarial and planning data and auxiliary tables, including a list of Standard Times; corrections to be applied to observed altitude.

For the Sun, Moon, and planets the G.H.A. and Dec. are tabulated directly for each hour of G.M.T. throughout the year. For the stars the *Sidereal Hour Angle* (S.H.A.) is given, and the G.H.A. is obtained from:

$$\text{G.H.A. Star} = \text{G.H.A. Aries} + \text{S.H.A. Star}$$

The S.H.A. and Dec. of the stars change slowly and may be regarded as constant over periods of several days. G.H.A. Aries, or the Greenwich Hour Angle of the first point of Aries (the Vernal Equinox), is tabulated for each hour. Permanent tables give the appropriate increments and corrections to the tabulated hourly values of G.H.A. and Dec. for the minutes and seconds of G.M.T.

The tabular accuracy is 0'·1 throughout.

3. *Lay-out.* The ephemeral data for three days are presented on an opening of two pages: the left-hand page contains the data for the planets and stars; the right-hand page contains the data for the Sun and Moon, together with times of twilight, sunrise, sunset, moonrise, and moonset.

The remaining contents are arranged as follows: for ease of reference the altitude-correction tables are given on the inside front and back covers and facing pages; calendar, Moon's phases, eclipses, and planet notes (i.e. data of general interest) precede the main tabulations; the other data follow the main tabulations and are arranged, as far as possible, in order of importance or frequency of use backwards from the inside back cover.

MAIN DATA

4. *Daily pages.* The daily pages give the G.H.A. of Aries, the G.H.A. and Dec. of the Sun, Moon, and the four navigational planets for each hour of G.M.T. For the Moon, values of v and d are also tabulated for each hour to facilitate the correction of G.H.A. and Dec. to intermediate times; v and d for the Sun and planets change so slowly that they are given, at the foot of the appropriate columns, once only on the page; v is zero for Aries and negligible for the Sun, and is omitted. The S.H.A. and Dec. of the 57 selected stars, arranged in alphabetical order of proper name, are also given.

5. *Stars.* The S.H.A. and Dec. of 173 stars, including the 57 selected stars, are tabulated for each month on pages 268–273; no interpolation is required and the data can be used in precisely the same way as those for the selected stars on the daily pages. The stars are arranged in order of S.H.A.

The list of 173 includes all stars down to magnitude 3.0, together with a few fainter ones to fill the larger gaps. The 57 selected stars have been chosen from amongst these on account of brightness and distribution in the sky; they will suffice for the majority of observations.

The 57 selected stars are known by their proper names, but they are also numbered in descending order of S.H.A. In the list of 173 stars, the constellation names are always given on the left-hand page; on the facing page proper names are given where well known names exist. Numbers for the selected stars are given in both columns.

An index to the selected stars, containing lists in both alphabetical and numerical order, is given on page xxxiii and is also reprinted on the bookmark.

Stars which, owing to their declinations, are unsuitable for use with the *Tables of Computed Altitude and Azimuth* (H.O. 214 or H.D. 486) are specially indicated.

6. *Increments and corrections.* These tables, printed on tinted paper (pages ii–xxxi) at the back of the Almanac, provide the increments and corrections for minutes and seconds to be applied to the hourly values of G.H.A. and Dec. They consist of sixty tables, one for each minute, separated into two parts: increments to G.H.A. for Sun and planets, Aries, and Moon for every minute and second; and, for each minute, corrections to be applied to G.H.A. and Dec. corresponding to the values of v and d given on the daily pages.

The increments are based on the following adopted hourly rates of increase of the G.H.A.: Sun and planets, 15° precisely; Aries, $15^\circ 02' 46''$; Moon, $14^\circ 19' 0''$. The values of v on the daily pages are the excess of the actual hourly motion over the adopted values; they are generally positive, except for Venus. The tabulated hourly values of the Sun's G.H.A. have been adjusted to reduce to a minimum the error caused by treating v as negligible. The values of d on the daily pages are the hourly differences of the Dec. For the Moon, the true values of v and d are given for each hour; otherwise mean values are given for the three days on the page.

7. *Method of entry.* The G.M.T. of an observation is expressed as a day and hour, followed by a number of minutes and seconds. The tabular values of G.H.A. and Dec., and where necessary the corresponding values of v and d , are taken directly from the daily pages for the day and hour of G.M.T.; this hour is always *before* the time of observation. S.H.A. and Dec. of the selected stars are also taken from the daily pages.

The table of Increments and Corrections for the minute of G.M.T. is then selected. For the G.H.A., the increment for minutes and seconds is taken from the appropriate column opposite the seconds of G.M.T.; the v -correction is taken from the second part of the same table opposite the value of v as given on the daily pages. Both increment and v -correction are to be added to the G.H.A., except for Venus when v is prefixed by a

minus sign and the v -correction is to be subtracted. For the Dec. there is no increment, but a d -correction is applied in the same way as the v -correction; d is given without sign on the daily pages and the sign of the correction is to be supplied by inspection of the Dec. column. In many cases the correction may be applied mentally.

8. *Examples.* (a) Sun and Moon. Required the G.H.A. and Dec. of the Sun and Moon on 1961 February 9 at G.M.T. 08^h 47^m 13^s.

	SUN			MOON		
	G.H.A.	Dec.	d	G.H.A.	v	Dec. d
Daily page, Feb. 9 ^d 08 ^h	296° 25' 6"	S.14° 42' 4"	0' 8"	21° 56' 8"	8' 9"	S.14° 40' 7" 6' 9"
Increments for 47 ^m 13 ^s	11 48' 3"			11 16' 0"		
v or d corrections for 47 ^m			-0' 6"		7' 0"	+5' 5"
Sum for Feb. 9 ^d 08 ^h 47 ^m 13 ^s	308 13' 9"	S.14 41' 8"		33 19' 8"		S.14 46' 2"

(b) Planets. Required the L.H.A. and Dec. of (i) Venus on 1961 February 9 at G.M.T. 09^h 53^m 19^s in longitude E. 150° 55'; (ii) Jupiter on 1961 February 9 at G.M.T. 11^h 25^m 12^s in longitude W. 55° 12'.

	VENUS				JUPITER			
	G.H.A.	v	Dec.	d	G.H.A.	v	Dec.	d
Daily page, Feb. 9 ^d (09 ^h)	268° 38' 2"	0' 5"	N.4° 20' 8"	1' 2"	(11 ^h) 9° 17' 7"	1' 9"	S.21° 36' 8"	0' 1"
Increments (planets) (53 ^m 19 ^s)	13 19' 8"				(25 ^m 12 ^s) 6 18' 0"			
v or d corrections (53 ^m)	0' 4"		+1' 1"		(25 ^m) 0' 8"		0' 0"	
Sum = G.H.A. and Dec.	281 58' 4"		N.4 21' 9"		15 36' 5"		S.21 36' 8"	
Longitude (east)	+150 55'				(west) - 55 12'			
Multiples of 360°	-360				+360			
L.H.A. planet	72 53' 4"				320 24' 5"			

(c) Stars. Required the G.H.A. and Dec. of (i) *Aldebaran* on 1961 February 9 at G.M.T. 14^h 55^m 13^s; (ii) *Vega* on 1961 February 9 at G.M.T. 17^h 02^m 45^s.

	<i>Aldebaran</i>		<i>Vega</i>	
	G.H.A.	Dec.	G.H.A.	Dec.
Daily page (S.H.A. and Dec.)	291° 34' 7"	N.16° 25' 8"	81° 06' 0"	N.38° 44' 7"
Daily page (G.H.A. Aries) (14 ^h)	349 25' 2"		(17 ^h) 34 32' 6"	
Increments (Aries) (55 ^m 13 ^s)	13 50' 5"		(02 ^m 45 ^s) 0 41' 4"	
Sum = G.H.A. star	654 50' 4"		116 20' 0"	
Multiples of 360°	-360			
G.H.A. star	294 50' 4"		116 20' 0"	

9. *Polaris (Pole Star) tables.* The tables on pages 274-276 provide means by which the latitude can be deduced from an observed altitude of *Polaris*, and they also give its azimuth; their use is explained and illustrated on those pages. They are based on the following formula:

$$\text{Latitude} - \text{corrected sextant altitude} = -p \cos h + \frac{1}{2} p \sin p \sin^2 h \tan (\text{latitude})$$

where p = the polar distance of *Polaris* = 90° - Dec.
 h = the local hour angle of *Polaris* = L.H.A. Aries + S.H.A.

a_0 , which is a function of L.H.A. Aries only, is the value of both terms of the above formula calculated for mean values of the S.H.A. (330° 43') and Dec. (N. 89° 05' 0") of *Polaris*, for a mean latitude of 50°, and adjusted by the addition of a constant (58' 8"). a_1 , which is a function of

L.H.A. Aries and latitude, is the excess of the value of the second term over its mean value for latitude 50° , increased by a constant (0.6) to make it always positive. a_2 , which is a function of L.H.A. Aries and date, is the correction to the first term for the variation of *Polaris* from its adopted mean position; it is increased by a constant (0.6) to make it positive. The sum of the added constants is 1° , so that:

$$\text{Latitude} = \text{corrected sextant altitude} - 1^\circ + a_0 + a_1 + a_2$$

RISING AND SETTING PHENOMENA

10. *General.* On the right-hand daily pages are given the times of sunrise and sunset, of the beginning and end of civil and nautical twilights, and of moonrise and moonset for a range of latitudes from S. 60° to N. 72° . These times, which are given to the nearest minute, are strictly the G.M.T. of the phenomena on the Greenwich meridian; they are given for every day for moonrise and moonset, but only for the middle day of the three on each page for the solar phenomena.

They are approximately the L.M.T. of the corresponding phenomena on other meridians; they can be formally interpolated if desired. The G.M.T. of a phenomenon is obtained from the L.M.T. by:

$$\text{G.M.T.} = \text{L.M.T.} \begin{array}{l} + \text{west} \\ - \text{east} \end{array} \text{longitude}$$

in which the longitude must first be converted to time by the table on page i or otherwise.

Interpolation for latitude can be done mentally or with the aid of Table I on page xxxii.

The following symbols are used to indicate the conditions under which, in high latitudes, some of the phenomena do not occur:

- ☐ Sun or Moon remains continuously above the horizon;
☒ Sun or Moon remains continuously below the horizon;
 /// twilight lasts all night.

11. *Sunrise, sunset, twilight.* The tabulated times may be regarded, without serious error, as the L.M.T. of the phenomena on any of the three days on the page and in any longitude. Precise times may normally be obtained by interpolating the tabular values for latitude and to the correct day and longitude, the latter being expressed as a fraction of a day by dividing it by 360° , positive for west and negative for east longitudes. In the extreme conditions near ☐ , ☒ or /// interpolation may not be possible in one direction; but accurate times are of little value in these circumstances.

Examples. Required the G.M.T. of (a) the beginning of morning twilights and sunrise on 1961 February 9 for latitude S. $58^\circ 55'$, longitude E. $75^\circ 18'$; (b) sunset and the end of evening twilights on 1961 February 11 for latitude N. $67^\circ 10'$, longitude W. $168^\circ 05'$.

	(a)	Twilight		Sunrise	(b)	Sunset	Twilight	
		Nautical	Civil				Civil	Nautical
From page 37		^h ^m	^h ^m	^h ^m		^h ^m	^h ^m	^h ^m
L.M.T. for Lat.	S. 58°	02 35	03 42	04 30	N. 66°	16 05	17 03	18 04
Correction (p. xxxii) to $58^\circ 55'$		-11	-7	-4	$67^\circ 10'$	-9	-6	0
Longitude (p. i)	E. $75^\circ 18'$	-5 01	-5 01	-5 01	W. $168^\circ 05'$	+11 12	+11 12	+11 12
G.M.T.		21 23	22 34	23 25		03 08	04 09	05 16

The L.M.T. are strictly for February 10 (middle date on page) and 0° longitude; for precise times it is necessary to interpolate:

(a) to February 9^d $- 75^{\circ}/360^{\circ} = \text{Feb. } 8^{\text{d}}.8$, i.e. $\frac{1}{3}(1.2) = 0.4$ backwards towards the data on page 35; the corrections are -6^{m} to nautical twilight and -4^{m} to civil twilight and -3^{m} to sunrise.

(b) to February 11^d $+ 168^{\circ}/360^{\circ} = \text{Feb. } 11^{\text{d}}.5$, i.e. $\frac{1}{3}(1.5) = 0.5$ forwards towards the data on page 39; the corrections are $+6^{\text{m}}$ to sunset, $+5^{\text{m}}$ to civil twilight, and $+4^{\text{m}}$ to nautical twilight.

Basis of the tabulations. At sunrise and sunset $16'$ is allowed for semi-diameter and $34'$ for horizontal refraction, so that at the times given the Sun's upper limb is on the visible horizon; all times refer to phenomena as seen from sea level with a clear horizon.

At the times given for the beginning and end of twilight, the Sun's zenith distance is 96° for civil, and 102° for nautical twilight. The degree of illumination at the times given for civil twilight (in good conditions and in the absence of other illumination) is such that the brightest stars are visible and the horizon is clearly defined. At the times given for nautical twilight the horizon is in general not visible, and it is too dark for observation.

Times corresponding to other depressions of the Sun may be obtained by interpolation or, for depressions of more than 12° , less reliably by extrapolation; times so obtained will be subject to considerable uncertainty near extreme conditions.

12. Moonrise, moonset. Precise times of moonrise and moonset are rarely needed; a glance at the tables will generally give sufficient indication of whether the Moon is available for observation and of the hours of rising and setting. If needed, precise times may be obtained as follows. Interpolate for latitude, using Table I on page xxxii, on the day wanted and also on the preceding day in east longitudes or the following day in west longitudes; take the difference between these times and interpolate for longitude by applying to the time for the day wanted the correction from Table II on page xxxii, so that the resulting time is between the two times used. In extreme conditions near  or  interpolation for latitude or longitude may be possible only in one direction; accurate times are of little value in these circumstances.

To facilitate this interpolation the times of moonrise and moonset are given for four days on each page; where no phenomenon occurs during a particular day (as happens once a month) the time of the phenomenon on the following day, increased by 24^{h} , is given. Thus the two times between which interpolation for longitude is to be made can usually be obtained from the same page. In practice it suffices to use the daily difference between the times for the nearest tabular latitude when using Table II.

Examples. Required the G.M.T. of moonrise and moonset in latitude S. $47^{\circ} 10'$, longitudes E. $125^{\circ} 00'$ and W. $76^{\circ} 31'$ on 1961 February 10.

	Longitude E. $125^{\circ} 00'$			Longitude W. $76^{\circ} 31'$		
	Moonrise			Moonrise		
	d	h	m	d	h	m
L.M.T. for Lat. S. 45°	10	00	00	10	14	53
Lat. correction (p. xxxii, Table I)		-7			-7	
Long. correction (p. xxxii, Table II)		-13			+11	
Correct L.M.T.	9	23	40	10	00	04
Longitude (p. i)		-8	20		+5	06
G.M.T.	9	15	20	10	05	10

Basis of the tabulations. At moonrise and moonset allowance is made for semi-diameter, parallax, and refraction ($34'$), so that at the times given the Moon's upper limb is on the visible horizon as seen from sea level.

ALTITUDE CORRECTION TABLES

13. *General.* In general two corrections are given for application to altitudes observed with a marine sextant; additional corrections are required for Venus and Mars and also for very low altitudes.

Duplicate tables of the correction for dip of the horizon, due to height of eye above sea-level, are given on the inside front and back covers. Strictly this correction should be applied first and subtracted from the sextant altitude to give apparent altitude, which is the correct argument for the other tables.

Separate tables are given of the second correction for the Sun, for the stars and planets (inside front cover and facing page—pages A2, A3), and for the Moon (inside back cover and facing page—pages xxxiv and xxxv). For the Sun values are given for both lower and upper limbs, for two periods of the year. The star tables are used for the planets, but additional corrections (inside front cover) are required for Venus and Mars. The Moon tables are in two parts: the main correction is a function of apparent altitude only; the other, which is given for both lower and upper limbs, depends also on the horizontal parallax, which has to be taken from the daily pages.

An additional correction, given on page A4, is also required for the change in the refraction, due to variations of pressure and temperature from the adopted standard conditions; it may generally be ignored for altitudes greater than 10° , except possibly in extreme conditions. It is for this reason that the correction tables for the Sun, stars, and planets are in two parts; only those for altitudes greater than 10° are reprinted on the bookmark.

14. *Critical tables.* Some of the altitude correction tables are arranged as critical tables. In these an interval of apparent altitude (or height of eye) corresponds to a single value of the correction; no interpolation is required. At a "critical" entry the upper of the two possible values of the correction is to be taken. For example, in the table of dip, a correction of $-4'.1$ corresponds to all values of the height of eye from 17.5 to 18.3 feet inclusive.

15. *Examples.* The following examples illustrate the use of the altitude correction tables; the sextant altitudes given are assumed to be taken on 1961 February 9 with a marine sextant at height 18 feet, temperature -3°C . and pressure 982 mb., the Moon sights being taken at about 10^h G.M.T.

	SUN lower limb	SUN upper limb	MOON lower limb	MOON upper limb	VENUS	Polaris
Sextant altitude	$21^\circ 19.7$	$3^\circ 20.2$	$33^\circ 27.6$	$26^\circ 06.7$	$4^\circ 32.6$	$49^\circ 36.5$
Dip, height 18 feet	-4.1	-4.1	-4.1	-4.1	-4.1	-4.1
Main correction	$+13.8$	-30.8	$+57.4$	$+60.5$	-10.8	-0.8
L, U correction for Moon	—	—	$+5.6$	$+3.9$	—	—
$-30'$ for upper limb (Moon)	—	—	—	-30.0	—	—
Additional correction for Venus	—	—	—	—	$+0.3$	—
Additional refraction correction	-0.1	-0.3	0.0	-0.1	-0.3	0.0
Corrected sextant altitude	$21^\circ 29.3$	$2^\circ 45.0$	$34^\circ 26.5$	$26^\circ 36.9$	$4^\circ 17.7$	$49^\circ 31.6$

The main corrections have been taken out with apparent altitude (sextant altitude corrected for dip) as argument, interpolating where possible. These refinements are rarely necessary.

16. *Basis of the corrections.* The table for the dip of the sea horizon is based on the formula:

$$\text{Correction for dip in minutes of arc} = -0.97 \sqrt{(\text{height of eye in feet})}$$

The mean refraction, given explicitly in the correction table for the stars and planets and

incorporated into those for the Sun and Moon, is based on Garfinkel's theory and is for a temperature of 10°C. (50°F.) and a pressure of 1010 mb. (29.83 inches). The additional corrections for variations of temperature and pressure from these adopted means are also based on Garfinkel's theory; there is no significant difference between the various theories to the accuracy given.

The correction table for the Sun includes the effects of semi-diameter, parallax, and irradiation, as well as the mean refraction; for the upper limb a correction of $-1'2$ is included for the combined effect of irradiation of the limb and horizon, but no such correction is needed for the lower limb.

The additional corrections for Venus and Mars allow for parallax and phase, and are given by $p \cos H - k \cos \theta$, where H is the altitude, θ the angle at the planet between the vertical and the Sun, and p and k are, for Venus, for 1961:—

	Jan. 1	Feb. 12	Mar. 7	Mar. 24	Apr. 28	May 14	June 5	July 24	Dec. 31
p	0.2	0.3	0.4	0.5	0.4	0.3	0.2	0.1	
k	0.1	0.2	0.3	0.4	0.3	0.2	0.1	0.0	

The corrections given on page A2, and on the bookmark, are mean values applicable in the case of Venus only when the Sun is below the horizon. For daylight observations of Venus the observed values of H and θ should be used to calculate the correction directly; the term $-k \cos \theta$ is positive when the Sun is lower than Venus, zero when they have the same altitude, and negative when the Sun is higher.

In the case of the Moon the correction table includes the effects of semi-diameter, parallax and augmentation as well as the mean refraction; no correction for irradiation is included.

17. *Bubble sextant observations.* When observing with a bubble sextant no correction is necessary for dip, semi-diameter, or augmentation. For the stars and planets the corrections given may be used unchanged; and they should also be used for the Sun; for the Moon it is easiest to take the mean of the corrections for lower and upper limbs; the correction for dip must not be applied.

AUXILIARY AND PLANNING DATA

18. *Sun and Moon.* On the daily pages are given: the semi-diameters and the times of meridian passage of both Sun and Moon over the Greenwich meridian; the equation of time; the horizontal parallax and the age of the Moon, together with a symbol indicating the phase. For the Moon, the semi-diameters for each of the three days are given, in order, at the foot of the column; for the Sun a single value is sufficient.

The times of the phases of the Moon are given in G.M.T. on page 4.

19. *Planets.* The magnitudes of the planets are given immediately following their names in the headings on the daily pages; their S.H.A. and times of meridian passage, for the middle day of the three on the page, are also given.

The planet notes and diagram on pages 8 and 9 provide descriptive information as to the suitability of the planets for observation during the year, and of their positions and movements.

20. *Stars.* The time of meridian passage of the first point of Aries over the Greenwich meridian is given on the daily pages, for the middle day of the three on the page, to 0^m.1. The interval between successive meridian passages is 23^h 56^m.1 (24^h less 3^m 56^s.6) so that times for intermediate days and other meridians can readily be derived. If a precise time is required it may be obtained by finding the G.M.T. at which L.H.A. Aries is zero.

The meridian passage of a star occurs when its L.H.A. is zero, that is when L.H.A. Aries + S.H.A. = 360°. An approximate time can be obtained from the planet diagram on page 9.

The star charts on pages 266 and 267 are intended to assist identification. They show the relative positions of the stars in the sky as seen from the Earth and include all 173 stars used in the Almanac, together with a few others to complete the main constellation configurations. The local meridian at any time may be located on the chart by means of its S.H.A. which is 360° - L.H.A. Aries, or west longitude - G.H.A. Aries.

21. *Star globe.* To set a star globe on which is engraved a scale of L.H.A. Aries, first set the globe for latitude and then rotate about the polar axis until the scale under the edge of the meridian circle reads L.H.A. Aries.

To mark the positions of the Sun, Moon, and planets on the star globe, take the difference G.H.A. Aries — G.H.A. body and use this along the L.H.A. Aries scale, in conjunction with the declination, to plot the position. G.H.A. Aries — G.H.A. body is most conveniently found by taking the difference when the G.H.A. of the body is small (less than 15°), which happens once a day.

22. *Calendar.* On page 4 are given lists of ecclesiastical festivals, and of the principal anniversaries and holidays in the British Commonwealth and the United States of America. The calendar on page 5 includes the day of the year as well as the day of the week.

Brief particulars are given, at the foot of page 5, of the solar and lunar eclipses occurring during the year; the times given are in G.M.T. The principal features of the more important solar eclipses are shown on the maps on pages 6 and 7.

23. *Standard times.* The lists on pages 262–265 give the standard times used in most countries. In general no attempt is made to give details of the beginning and end of summer time, since they are liable to frequent changes at short notice.

The Date or Calendar Line is an arbitrary line, on either side of which the date differs by one day; when crossing this line on a westerly course, the date must be advanced one day; when crossing it on an easterly course, the date must be put back one day. The line is a modification of the line of the 180th meridian, and is drawn so as to include, as far as possible, islands of any one group, etc., on the same side of the line. It may be traced by joining up the following positions:

Lat. S. $60^\circ 00'$	S. $51^\circ 00'$	S. $45^\circ 00'$	S. $15^\circ 00'$	S. $5^\circ 00'$	N. $48^\circ 00'$	N. $53^\circ 00'$	N. $65^\circ 30'$
Long. $180^\circ 00'$	$180^\circ 00'$	W. $172^\circ 30'$	W. $172^\circ 30'$	$180^\circ 00'$	$180^\circ 00'$	E. $170^\circ 00'$	W. $169^\circ 00'$

Thence through the middle of the Diomed Islands to Lat. $N.68^\circ 00'$, Long. $W.169^\circ 00'$, and thence passing east of Herald Island to Lat. $N.75^\circ 00'$, Long. $180^\circ 00'$.

ACCURACY

24. *Main data.* The quantities tabulated in this Almanac are generally correct to the nearest 0.1 ; the exception is the Sun's G.H.A. which is deliberately adjusted by up to 0.15 to reduce the error due to ignoring the v -correction. The G.H.A. and Dec. at intermediate times cannot be obtained to this precision, since at least two quantities must be added; moreover, the v - and d -corrections are based on mean values of v and d and are taken from tables for the whole minute only. The largest error that can occur in the G.H.A. or Dec. of any body other than the Sun or Moon is less than 0.2 ; it may reach 0.25 for the G.H.A. of the Sun and 0.3 for that of the Moon.

In practice it may be expected that only one-third of the values of G.H.A. and Dec. taken out will have errors larger than 0.05 and less than one-tenth will have errors larger than 0.1 .

25. *Altitude corrections.* The errors in the altitude corrections are nominally of the same order as those in G.H.A. and Dec., as they result from the addition of several quantities each correctly rounded off to 0.1 . But the actual values of the dip and of the refraction at low altitudes may, in extreme atmospheric conditions, differ considerably from the mean values used in the tables.

USE OF THIS ALMANAC IN 1962

This Almanac may be used for the Sun and stars in 1962 in the following manner.

For the Sun take out the G.H.A. and Dec. for the same date but for a time $5^h 48^m 00^s$ earlier than the G.M.T. of observation; add $87^\circ 00'$ to the G.H.A. so obtained. The error, mainly due to planetary perturbations of the Earth, is unlikely to exceed 0.4 .

For the stars calculate the G.H.A. and Dec. for the same date and the same time, but subtract 15.1 from the G.H.A. so found. The error, due to incomplete correction for precession and nutation, is unlikely to exceed 0.4 . If preferred, the same result can be obtained by using a time $5^h 48^m 00^s$ earlier than the G.M.T. of observation (as for the Sun) and adding $86^\circ 59.2$ to the G.H.A. (or adding 87° as for the Sun and subtracting 0.8 , for precession, from the S.H.A. of the star).

The Almanac cannot be so used for the Moon or planets.

LIST I—PLACES EAST ON G.M.T. (EAST OF GREENWICH)

The times given { added to G.M.T. to give Standard Time.

below should be { subtracted from Standard Time to give G.M.T.

	h	m		h	m
Aden	03		France†	01	
Admiralty Islands	10		French Equatorial Africa²	01	
Albania*	01		French Somaliland	03	
Algeria	01		Friendly Islands	12	20
Amirante Islands	04				
Andaman Islands	05	30	Germany	01	
Angola (Portuguese West Africa)	01		Gibraltar†	01	
Annobon Islands‡	01		Gilbert and Ellice Islands	12	
Australian Capital Territory	10		Greece	02	
Austria	01		Guam	10	
Bahrein	04		Gwadar	04	30
Balearic Islands‡	01				
Basutoland	02		Holland	01	
Bechuanaland	02		Hong Kong*	08	
Belgian Congo (western part, including Coquilhatville and Leopoldville) (eastern part, including Coster- mansville, Elisabethville, Lusambo, and Stanleyville)	01		Hungary*	01	
Belgium	01				
British New Guinea	10		India	05	30
British North Borneo	08		Indo-China,* Federation of		
British Somaliland	03		Cambodia	07	
Bulgaria	02		Laos	07	
Burma	06	30	Viet Nam	07	
Cameroon	01		Indonesia, United States of		
Caroline Islands (east of long. E. 160°) (west of long. E. 160°)	12		Mentawai Is., Nias, Northern		
(Truk, Ponape)	11		Sumatra	06	30
Ceylon	05	30	Anambas Is., Bangka, Belitong, Natuna Is., Rhio Is., Southern		
Chagos Archipelago	05		Sumatra	07	
Chatham Islands‡	12	45	Bali, Borneo, Java, Lombok, Madura	07	30
China¹	08		Alor, Celebes, Flores, Lomblem, Pantar, Roti, Sanghi Is., Savu, Sumba, Sumbawa, Talaur Is.,		
Christmas Island, Indian Ocean	07		Timor	08	
Cocos-Keeling Islands	06	30	Babar Is., Moluccas {Buru, Halmahera, Serang (Ceram)},		
Comoro Islands	03		Sula Is., Wetta	08	30
Corsica‡	01		Aru Is., Kei Is., Tanimbar Is.	09	
Crete	02		Iran (Persia)	03	30
Cyprus	02		‘Iraq	03	
Cyrenaica‡	02		Israel*	02	
Czechoslovakia	01		Italy	01	
Dahomey (French West Africa)	01				
Denmark	01		Japan	09	
Dutch New Guinea	09	30	Jappen Islands	09	
Egypt*	02		Jordan	02	
Ellice Islands	12				
Eritrea	03		Kamchatka Peninsula	12	
Estonia	03		Kenya	03	
Fernando Po‡	01		Korea*	08	30
Fiji	12		Kuril Islands	09	
Finland	02		Kuweit	03	
Formosa*	08				
			Labuan	08	
			Laccadive Islands	05	30
			Ladrone Islands	10	
			Latvia	03	

* Summer time may be kept in these countries.

‡ This time is used throughout the year, but may differ from the legal time.

¹ All the coast, but some areas may keep summer time.

² French Equatorial Africa includes Chad, Gabon, Middle Congo and Ubangi Shari.

LIST I—(continued)

	h	m		h	m
Lebanon	02		Sakhalin (south of lat. N. 50°)	09	
Lichtenstein	01		(north of lat. N. 50°)	10	
Lithuania	03		Santa Cruz Islands	11	
Lord Howe Island	10		Sarawak	08	
Luxembourg‡	01		Sardinia	01	
Macao*	08		Schouten Islands	09	
Madagascar*	03		Seychelles	04	
Malaya, Federation of	07	30	Siam (Thailand)	07	
Maldives Republic	05	05	Siberia ² (west of long. E. 67° 30')...	05	
Malta	01		(long. E. 67° 30' to E. 82° 30')...	06	
Manchuria	08	30	(long. E. 82° 30' to E. 97° 30')...	07	
Mariana Islands	10		(long. E. 97° 30' to E. 112° 30')...	08	
Marshall Islands	12		(long. E. 112° 30' to E. 127° 30')...	09	
Mauritius	04		(long. E. 127° 30' to E. 142° 30')...	10	
Monaco‡	01		(long. E. 142° 30' to E. 157° 30')...	11	
Mozambique (Portuguese E. Africa)	02		(long. E. 157° 30' to E. 172° 30')...	12	
Mukalla (Hadhramaut)	03		(east of long. E. 172° 30')	13	
Nanyo-Gunto	09		Sicily	01	
Nauru	11	30	Singapore	07	30
Netherlands, The	01		Socotra	03	
New Caledonia	11		Solomon Islands	11	
New Guinea, British	10		Somalia	03	
New Guinea, Dutch	09	30	Somaliland	03	
New Hebrides	11		South Africa, Union of	02	
New South Wales ¹	10		South Australia	09	30
New Zealand	12		Southern Rhodesia	02	
Nicobar Islands	05	30	Spain‡	01	
Nigeria	01		Spanish Guinea‡	01	
Norfolk Island	11	30	Spitzbergen	01	
North Borneo	08		Sudan, Republic of	02	
Northern Rhodesia	02		Swaziland	02	
Northern Territory, Australia	09	30	Sweden	01	
Norway	01		Switzerland	01	
Novaya Zemlya	05		Syria*	02	
Nyasaland	02		Tanganyika Territory	03	
Ocean Island	11		Tasmania	10	
'Oman (Masira, Muscat and Salala)	04		Thailand (Siam)	07	
Pakistan (East)	06		Timor	08	
(West)	05		Tonga Islands	12	20
Papua	10		Transjordan (Jordan)	02	
Pescadores Islands*	08		Tripolitania	02	
Philippine Republic	08		Trucial 'Oman (Sharja)	04	
Poland*	01		Truk	11	
Portuguese East Africa (Mozambique)	02		Tunisia	01	
Portuguese India	05	30	Turkey	02	
Portuguese West Africa (Angola)	01		Uganda	03	
Qatar	04		Union of South Africa	02	
Queensland	10		Victoria	10	
Réunion	04		Western Australia	08	
Rhodesia	02		Wrangell Island	13	
Romania	02		Yugoslavia	01	
Russia ² (west of long. E. 40°)	03		Zanzibar	03	
(long. E. 40° to E. 52° 30')	04				
(east of long. E. 52° 30')	05				

* Summer time may be kept in these countries.

‡ This time is used throughout the year, but may differ from the legal time.

¹ Except Broken Hill Area, which keeps 09^h 30^m.² The boundaries between the zones are irregular; the longitudes given are approximate only.

Ascension Island	French W. Africa ²	Guinea Republic	Portugal*	São Thomé	Tristan Da Cunha
Canary Islands‡	Gambia	Ireland, North'n ¹	Principe	Sierra Leone	
Channel Islands ¹	Ghana	Irish Republic*	Rio de Oro‡	Tangier	
Faeroes, The	Great Britain ¹	Morocco*	St. Helena	Togoland (Fr.)	

* Summer time may be kept in these countries.
‡ G.M.T. is in general use throughout the year, but the legal standard time differs from G.M.T.
¹ Summer time, one hour in advance of G.M.T., is kept from April 16^d 02^h to October 8^d 02^h (*Summer Time Act*, 1925).
² Comprises : Ivory Coast, Mauritania, Niger, Senegal, French Sudan and Upper Volta; for Dahomey see List I.

LIST III—PLACES SLOW ON G.M.T. (WEST OF GREENWICH)

The times given *subtracted* from G.M.T. to give Standard Time.
below should be *added* to Standard Time to give G.M.T.

	h	m		h	m
Alabama, U.S.A. ¹	06		Cuba	05	
Alaska, south-east coast to and including Cross Sound, Douglas, Juneau, Kimsham Cove and Petersburg	08		Curaçao Island	04	30
coast northward of Cross Sound to long. W. 141°	09		Delaware, U.S.A. ¹	05	
long. W. 141° to W. 162°, including Anchorage, Fairbanks, Seward, Valdez	10		Dominican Republic	05	
west coast (Nome)	11		Dutch Guiana (Surinam)	03	30
Alberta*	07		Ecuador	05	
Aleutian Islands	11		Falkland Islands ⁵	04	
Argentina‡	03		Estate San Carlos	03	30
Arizona, ² U.S.A. ¹	07		Bases in Graham Land	03	
Arkansas, U.S.A. ¹	06		Fanning Island	10	
Austral Islands ³	10		Fernando Noronha	02	
Azores*	02		Florida, ² U.S.A. ¹	05	
Bahamas	05		French Guiana	04	
Barbados	04		Georgia, U.S.A. ¹	05	
Bermuda*	04		Greenland, Scoresby Sound	02	
Bolivia	04		Angmagssalik and W. coast	03	
Brazil* (Central)	04		Thule area	04	
(Eastern) ⁴	03		Grenada*	04	
(Western)	05		Guadeloupe	04	
British Columbia*	08		Guatemala	06	
British Guiana	03	45	Guiana, British	03	45
British Honduras†	06		Dutch	03	30
California, U.S.A. ¹	08		French	04	
Canada (see provinces)	03	30 to 09 ^h	Haiti	05	
Cape Verde Islands	02		Hawaiian Islands (except Midway Is.)	10	
Cayman Islands	05		Honduras	06	
Chile	04		Honduras, British†	06	
Christmas Is. (Gilbert and Ellice) ...	10		Iceland*	01	
Colombia	05		Idaho, ² U.S.A. ¹	07	
Colorado, U.S.A. ¹	07		Illinois, U.S.A. ¹	06	
Connecticut, U.S.A. ¹	05		Indiana, U.S.A. ¹	06	
Cook Islands (except Niue)	10	30	Iowa, U.S.A. ¹	06	
Costa Rica	06		Jamaica	05	
			Johnston Island	11	
			Kansas, ² U.S.A. ¹	06	
			Kentucky, ² U.S.A. ¹	06	

* Summer time may be kept in these countries.
† Winter time may be kept in these countries.
‡ This time is used throughout the year, but may differ from the legal time.
¹ Summer (daylight-saving) time, one hour fast on the time given, is kept in some parts of the U.S.A., especially in the east and in the metropolitan areas. The dates of beginning and end are normally the last Sunday in April and the last Sunday in September or October, at 02^h 00^m local clock time.
² This applies to the greater portion of the state.
³ This is the legal standard time, but local mean time is generally used.
⁴ Including all the coast. ⁵ Port Stanley keeps summer time October to March.

LIST III—(continued)

	h	m	s
Labrador*	03	30	
Leeward Islands	04		
Liberia	00	44	30
Louisiana, U.S.A. ¹	06		
Low Archipelago	10		
Madeira*	01		
Maine, U.S.A. ¹	05		
Manitoba*	06		
Marquesas Islands ²	10		
Martinique	04		
Maryland, U.S.A. ¹	05		
Massachusetts, U.S.A. ¹	05		
Mexico ³	06		
Michigan, ⁴ U.S.A. ¹	05		
Midway Islands	11		
Minnesota, U.S.A. ¹	06		
Miquelon*	04		
Mississippi, U.S.A. ¹	06		
Missouri, U.S.A. ¹	06		
Montana, U.S.A. ¹	07		
Nebraska, U.S.A. ¹ (eastern part)	06		
(western part)	07		
Nevada, U.S.A. ¹	08		
New Brunswick*	04		
Newfoundland*	03	30	
New Hampshire, U.S.A. ¹	05		
New Jersey, U.S.A. ¹	05		
New Mexico, U.S.A. ¹	07		
New York, U.S.A. ¹	05		
Nicaragua	06		
Niue Island	11	20	
North Carolina, U.S.A. ¹	05		
North Dakota, ⁴ U.S.A. ¹	06		
Northwest Territories* (east of long. W. 68°)	04		
(long. W. 68° to W. 85°)	05		
(long. W. 85° to W. 102°)	06		
(long. W. 102° to W. 120°)	07		
(west of long. W. 120°)	08		
Nova Scotia*	04		
Ohio, U.S.A. ¹	05		
Oklahoma, U.S.A. ¹	06		
Ontario* (east of long. W. 90°)	05		
(west of long. W. 90°)	06		
Oregon, U.S.A. ¹	08		
Panama Canal Zone	05		
Panama (Republic of)	05		
Paraguay	04		
Pennsylvania, U.S.A. ¹	05		
Peru	05		
Portuguese Guinea	01		
Prince Edward Island*	04		
Puerto Rico	04		
Quebec * (east of long. W. 68°)	04		
(west of long. W. 68°)	05		
Rarotonga	10	30	
Rhode Island, U.S.A. ¹	05		
St. Pierre and Miquelon*	04		
Salvador	06		
Samoa	11		
Saskatchewan* (south-eastern part)	06		
(except south-eastern part)	07		
Savage Island	11	20	
Scoresby Sound, Greenland	02		
Society Islands ²	10		
South Carolina, U.S.A. ¹	05		
South Dakota, U.S.A. ¹ (eastern part)	06		
(western part)	07		
South Georgia	02		
Surinam (Dutch Guiana)	03	30	
Tennessee, ⁴ U.S.A. ¹	06		
Texas, ⁴ U.S.A. ¹	06		
Tobago	04		
Trindade Islands, S. Atlantic	02		
Trinidad	04		
Tuamotu Archipelago ²	10		
Tubuai Islands ²	10		
Uruguay	03		
Utah, ⁴ U.S.A. ¹	07		
Venezuela	04	30	
Vermont, U.S.A. ¹	05		
Virginia, U.S.A. ¹	05		
Washington, D.C., U.S.A. ¹	05		
Washington, U.S.A. ¹	08		
West Virginia, U.S.A. ¹	05		
Windward Islands ⁵	04		
Wisconsin, U.S.A. ¹	06		
Wyoming, U.S.A. ¹	07		
Yukon	09		

* Summer time may be kept in these countries.

¹ Summer (daylight-saving) time, one hour fast on the time given, is kept in some parts of the U.S.A., especially in the east and in the metropolitan areas. The dates of beginning and end are normally the last Sunday in April and the last Sunday in September or October, at 02^h 00^m local clock time.

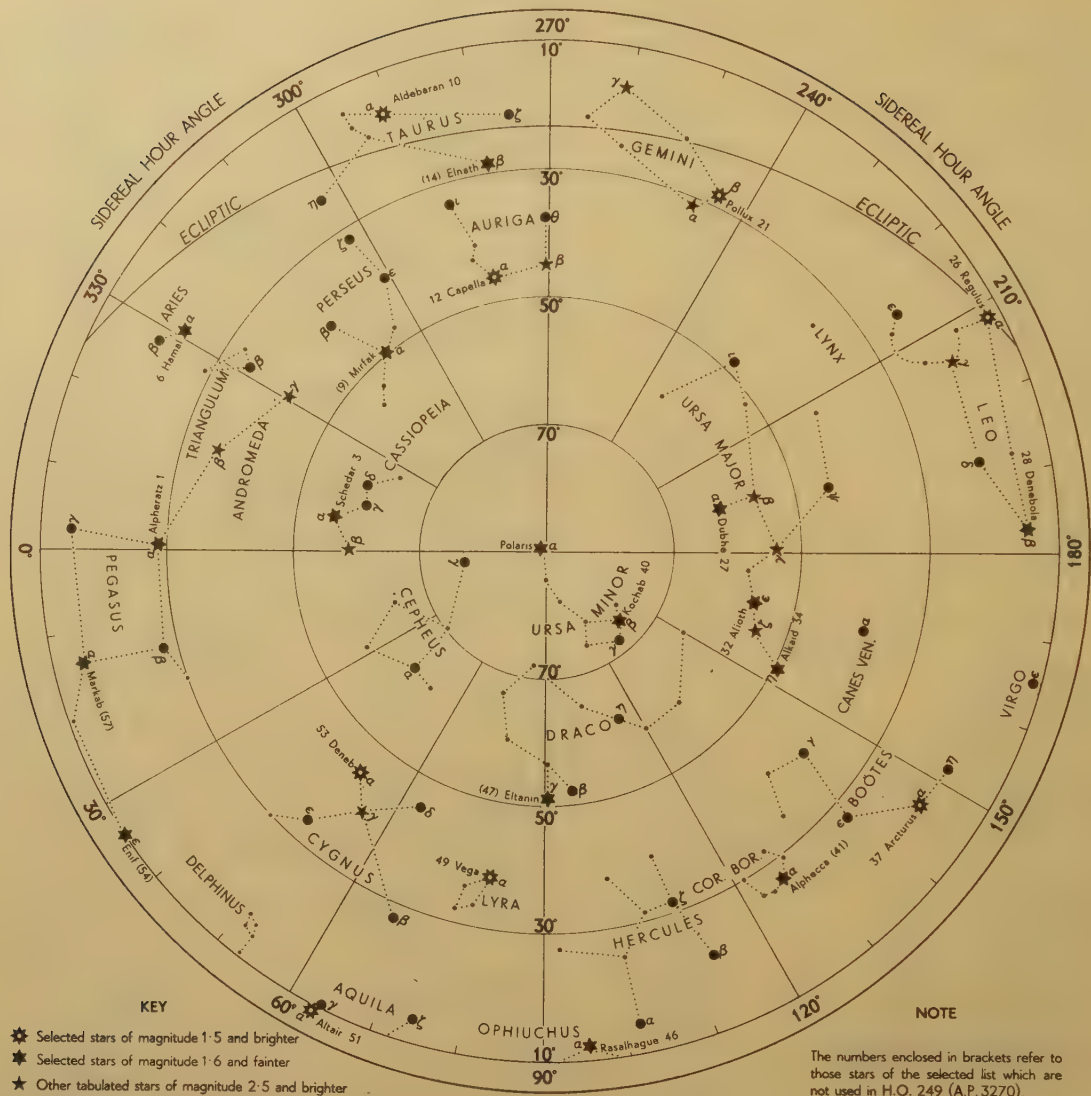
² This is the legal standard time, but local mean time is generally used.

³ Except the states of Sonora, Sinaloa, Nayarit, and the Southern District of Lower California which keep 07^h; and the Northern District of Lower California which keeps 08^h.

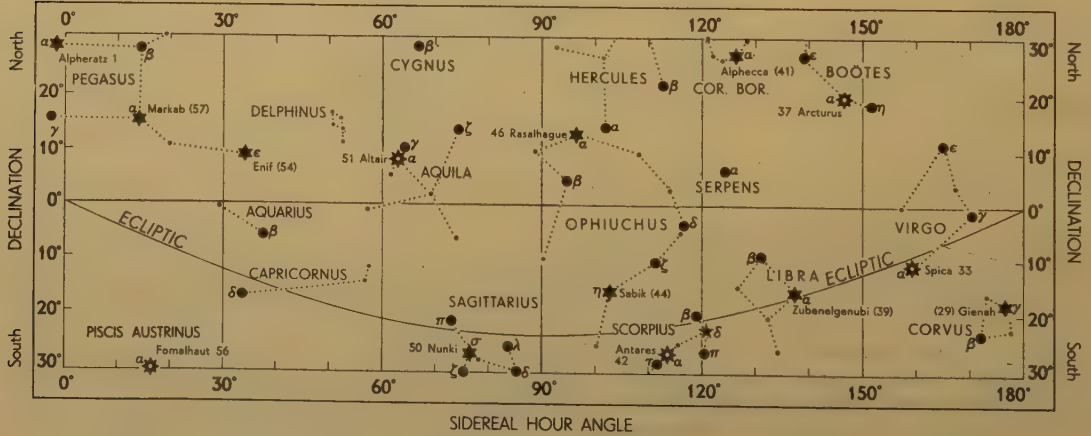
⁴ This applies to the greater portion of the state.

⁵ Grenada keeps summer time.

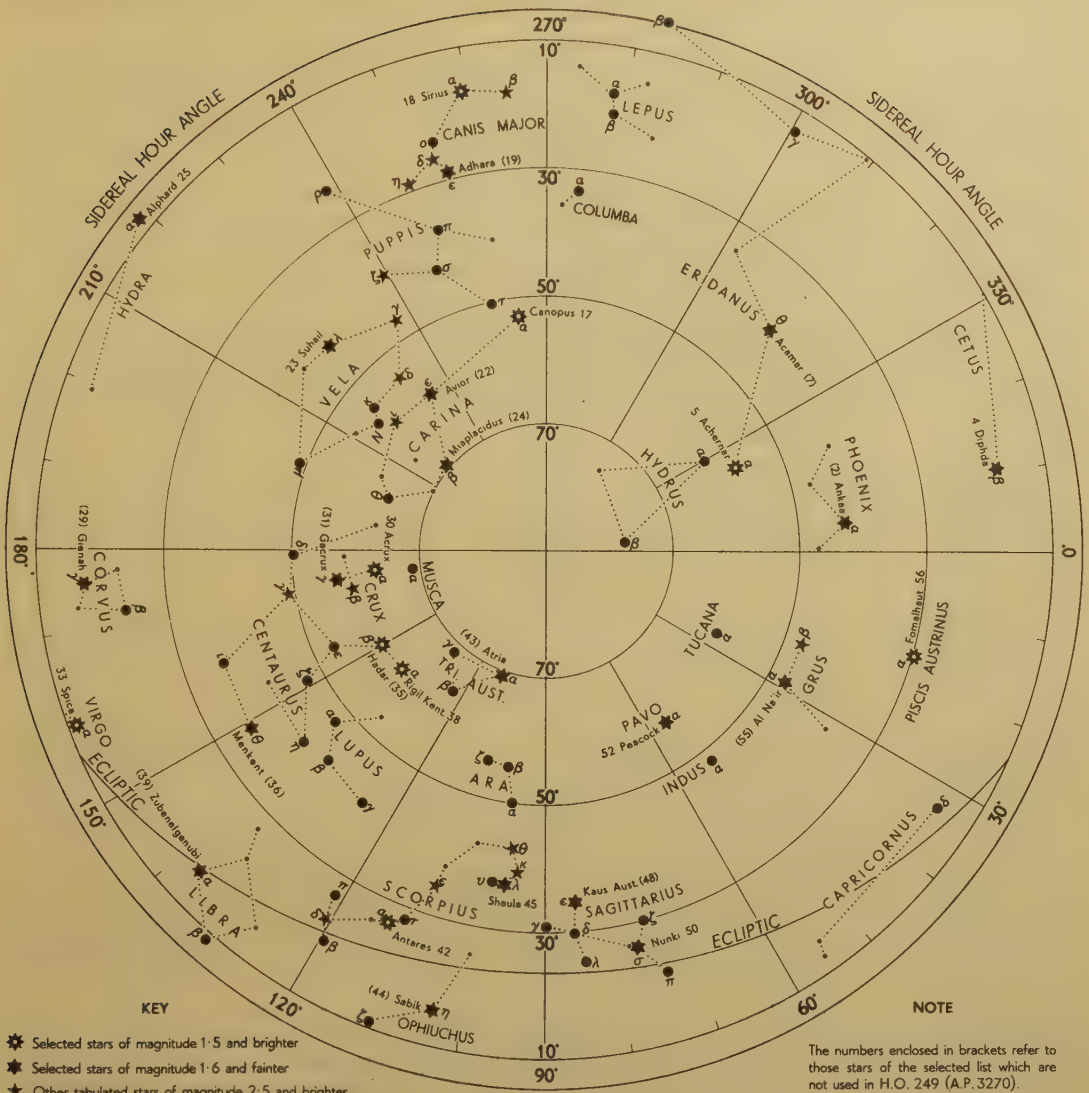
NORTHERN STARS



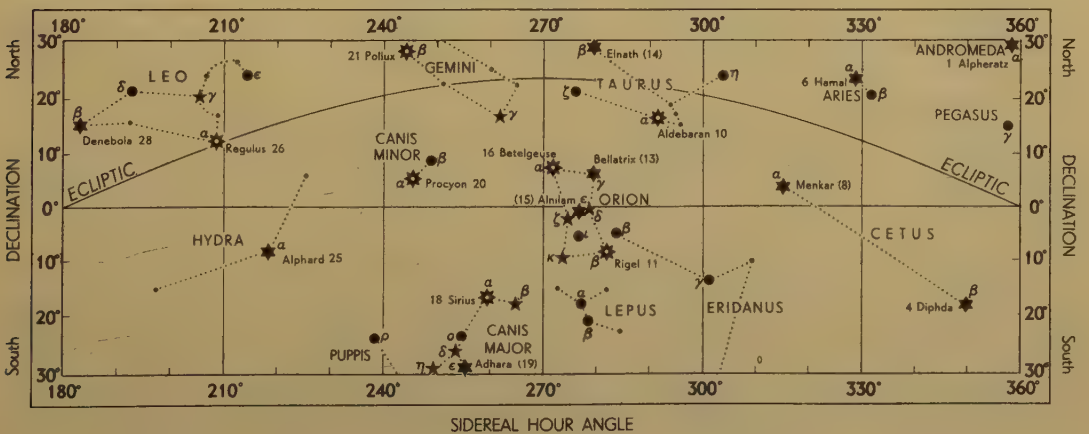
EQUATORIAL STARS (S.H.A. 0° to 180°)



SOUTHERN STARS



EQUATORIAL STARS (S.H.A. 180° to 360°)



Mag.	Name and No.	S.H.A.							Declination						
			JAN.	FEB.	MAR.	APR.	MAY	JUNE		JAN.	FEB.	MAR.	APR.	MAY	JUNE
3.4	γ Cephei †	5	34.2	34.7	34.9	34.6	34.0	33.3	N. 77	25.2	25.0	24.9	24.8	24.7	24.7
2.6	α Pegasi	57	14	18.0	18.0	18.0	17.9	17.7	N. 14	59.7	59.7	59.6	59.6	59.7	59.7
2.6	β Pegasi		14	32.0	32.1	32.0	31.9	31.7	N. 27	52.4	52.3	52.2	52.1	52.2	52.2
1.3	α Piscis Aust.	56	16	07.9	07.9	07.9	07.7	07.5	S. 29	49.9	49.9	49.8	49.7	49.6	49.5
2.2	β Gruis		19	55.4	55.4	55.3	55.1	54.9	S. 47	05.5	05.4	05.3	05.2	05.1	05.0
2.9	α Tucanae		26	03.1	03.1	03.0	02.7	02.4	S. 60	27.5	27.3	27.2	27.0	26.9	26.9
2.2	α Gruis	55	28	33.8	33.8	33.7	33.5	33.2	S. 47	09.2	09.1	09.0	08.8	08.7	08.7
3.0	δ Capricorni		33	47.0	47.0	46.9	46.7	46.5	S. 16	18.3	18.3	18.3	18.2	18.2	18.1
2.5	ε Pegasi	54	34	26.3	26.3	26.2	26.0	25.8	N. 9	41.8	41.7	41.7	41.7	41.7	41.8
3.1	β Aquarii		37	37.8	37.7	37.6	37.5	37.2	S. 5	44.6	44.6	44.6	44.6	44.5	44.5
2.6	α Cephei		40	35.7	35.7	35.6	35.3	34.9	N. 62	25.4	25.2	25.1	25.0	25.0	25.1
2.6	ε Cygni		48	50.9	50.8	50.7	50.5	50.3	N. 33	49.5	49.4	49.3	49.3	49.3	49.4
1.3	α Cygni	53	49	58.9	58.8	58.7	58.4	58.2	N. 45	08.5	08.4	08.3	08.2	08.3	08.4
3.2	α Indi		51	18.2	18.1	17.9	17.6	17.3	S. 47	25.7	25.6	25.5	25.5	25.4	25.4
2.1	α Pavonis	52	54	22.2	22.1	21.8	21.5	21.1	S. 56	51.7	51.6	51.5	51.4	51.4	51.4
2.3	γ Cygni		54	48.0	47.9	47.8	47.5	47.3	N. 40	08.0	07.8	07.7	07.7	07.8	07.9
0.9	α Aquilæ	51	62	47.2	47.1	46.9	46.7	46.5	N. 8	45.9	45.8	45.8	45.8	45.8	46.0
2.8	γ Aquilæ		63	54.3	54.2	54.0	53.8	53.6	N. 10	31.1	31.0	31.0	31.0	31.1	31.2
3.0	δ Cygni		64	04.1	04.0	03.8	03.6	03.3	N. 45	02.2	02.0	01.9	01.9	02.0	02.1
3.2	β Cygni		67	43.2	43.1	42.9	42.7	42.4	N. 27	52.7	52.5	52.5	52.5	52.5	52.7
3.0	π Sagittarii		73	08.8	08.6	08.4	08.2	08.0	S. 21	05.1	05.1	05.1	05.1	05.1	05.1
3.0	ζ Aquilæ		74	06.1	06.0	05.8	05.6	05.4	N. 13	48.3	48.2	48.2	48.2	48.3	48.4
2.7	ζ Sagittarii		74	58.5	58.3	58.1	57.9	57.6	S. 29	56.2	56.1	56.1	56.1	56.1	56.1
2.1	σ Sagittarii	50	76	47.7	47.6	47.4	47.1	46.9	S. 26	20.7	20.7	20.7	20.7	20.6	20.6
0.1	α Lyrae	49	81	06.2	06.0	05.8	05.5	05.3	N. 38	44.8	44.7	44.6	44.6	44.7	44.9
2.9	λ Sagittarii		83	37.0	36.8	36.6	36.3	36.1	S. 25	26.6	26.6	26.6	26.5	26.5	26.5
2.0	ε Sagittarii	48	84	36.7	36.5	36.3	36.0	35.8	S. 34	24.1	24.1	24.1	24.1	24.1	24.1
2.8	δ Sagittarii		85	23.0	22.8	22.6	22.3	22.1	S. 29	50.6	50.6	50.6	50.6	50.6	50.6
3.1	γ Sagittarii		89	10.9	10.7	10.5	10.2	10.0	S. 30	25.4	25.4	25.4	25.4	25.4	25.5
2.4	γ Draconis	47	91	05.0	04.8	04.5	04.2	04.0	N. 51	29.6	29.4	29.4	29.4	29.5	29.7
2.9	β Ophiuchi		94	37.2	37.0	36.8	36.6	36.4	N. 4	35.0	34.9	34.9	34.9	35.0	35.0
2.5	κ Scorpii		95	03.6	03.4	03.1	02.9	02.6	S. 39	00.5	00.5	00.5	00.5	00.5	00.6
2.0	θ Scorpii		96	22.8	22.5	22.2	21.9	21.7	S. 42	58.3	58.3	58.3	58.3	58.3	58.4
2.1	α Ophiuchi	46	96	43.5	43.3	43.1	42.9	42.7	N. 12	35.3	35.2	35.2	35.2	35.2	35.3
1.7	λ Scorpii	45	97	16.1	15.8	15.6	15.3	15.1	S. 37	04.4	04.4	04.4	04.5	04.5	04.5
3.0	β Draconis		97	37.3	37.0	36.7	36.5	36.3	N. 52	19.8	19.6	19.6	19.6	19.8	19.9
3.0	α Aræ		97	48.2	47.9	47.5	47.2	47.0	S. 49	50.6	50.6	50.6	50.6	50.7	50.7
2.8	ν Scorpii		97	58.8	58.5	58.3	58.0	57.8	S. 37	15.8	15.8	15.8	15.8	15.8	15.9
2.8	β Aræ		99	29.8	29.4	29.1	28.7	28.4	S. 55	29.5	29.4	29.4	29.5	29.5	29.6
Var. ‡	α Herculis		101	47.3	47.1	46.9	46.7	46.6	N. 14	26.1	26.0	25.9	26.0	26.0	26.1
2.6	η Ophiuchi	44	102	58.3	58.0	57.8	57.6	57.4	S. 15	40.5	40.6	40.6	40.6	40.6	40.6
3.1	ζ Aræ		106	09.7	09.4	09.0	08.7	08.4	S. 55	55.6	55.5	55.5	55.6	55.7	55.8
2.4	ε Scorpii		108	05.8	05.6	05.3	05.1	04.9	S. 34	13.2	13.3	13.3	13.3	13.4	13.4
1.9	α Triang. Aust.	43	108	52.9	52.4	51.8	51.3	51.0	S. 68	57.2	57.2	57.2	57.3	57.4	57.5
3.0	ζ Herculis		110	03.1	02.9	02.7	02.5	02.3	N. 31	40.3	40.2	40.2	40.3	40.4	40.5
2.7	ζ Ophiuchi		111	15.2	14.9	14.7	14.5	14.4	S. 10	29.3	29.3	29.3	29.4	29.3	29.3
2.9	τ Scorpii		111	38.6	38.3	38.1	37.9	37.7	S. 28	08.0	08.0	08.1	08.1	08.2	08.2
2.8	β Herculis		112	52.2	52.0	51.8	51.6	51.4	N. 21	34.4	34.3	34.3	34.3	34.4	34.5
1.2	α Scorpii	42	113	15.1	14.9	14.6	14.4	14.3	S. 26	20.6	20.7	20.7	20.7	20.8	20.8
2.9	η Draconis		114	08.7	08.4	08.0	07.7	07.5	N. 61	36.0	35.9	35.9	36.0	36.1	36.3
3.0	δ Ophiuchi		116	55.8	55.6	55.4	55.2	55.1	S. 3	35.6	35.7	35.7	35.7	35.7	35.7
2.8	β Scorpii		119	12.8	12.5	12.3	12.1	12.0	S. 19	41.8	41.9	41.9	42.0	42.0	42.0
2.5	δ Scorpii		120	29.9	29.7	29.4	29.3	29.1	S. 22	30.6	30.6	30.7	30.7	30.7	30.7
3.0	π Scorpii		120	52.9	52.7	52.5	52.3	52.1	S. 26	00.0	00.0	00.1	00.1	00.2	00.2
3.0	β Trianguli Aust.		122	05.0	04.6	04.2	03.8	03.6	S. 63	18.4	18.4	18.5	18.6	18.7	18.8
2.8	α Serpentis		124	25.1	24.9	24.6	24.5	24.4	N. 6	32.9	32.8	32.8	32.8	32.8	32.9
2.3	α Coronæ Bor.	41	126	44.8	44.5	44.3	44.2	44.0	N. 26	50.6	50.6	50.5	50.6	50.7	50.8
3.0	γ Lupi †		126	52.2	51.9	51.7	51.5	51.3	S. 41	02.0	02.0	02.1	02.2	02.2	02.3

‡ 3.0—3.7

† Not suitable for use with H.O. 214 (H.D. 486)

Mag.	Name and No.	S.H.A.							Declination						
			JULY	AUG.	SEPT.	OCT.	NOV.	DEC.		JULY	AUG.	SEPT.	OCT.	NOV.	DEC.
3.4	γ Cephei†	5	32.6	32.1	31.9	32.0	32.5	33.1	N. 77	24.8	24.9	25.1	25.3	25.4	25.5
2.6	Markab	57	14	17.3	17.1	17.0	17.1	17.2	N. 14	59.8	60.0	60.0	60.1	60.1	60.1
2.6	Scheat		14	31.2	31.1	31.0	31.1	31.2	N. 27	52.4	52.5	52.6	52.7	52.7	52.7
1.3	Fomalhaut	56	16	07.0	06.9	06.8	06.8	06.9	S. 29	49.4	49.4	49.5	49.5	49.6	49.7
2.2	β Gruis	19	54.3	54.1	54.0	54.1	54.2	54.4	S. 47	05.0	05.0	05.1	05.2	05.3	05.3
2.9	α Tucanae	26	01.6	01.4	01.4	01.5	01.7	02.0	S. 60	26.9	27.0	27.1	27.2	27.3	27.3
2.2	δ Al Na'ir	55	28	32.7	32.5	32.5	32.6	32.7	S. 47	08.7	08.7	08.8	08.9	09.0	09.0
3.0	δ Capricorni	33	46.1	46.0	46.0	46.0	46.2	46.3	S. 16	18.0	18.0	18.0	18.0	18.1	18.1
2.5	Enif	54	34	25.4	25.3	25.3	25.4	25.5	N. 9	41.9	42.0	42.1	42.1	42.1	42.1
3.1	β Aquarii	37	36.8	36.8	36.8	36.8	36.9	37.0	S. 5	44.4	44.3	44.3	44.3	44.3	44.4
2.6	Alderamin	40	34.3	34.3	34.4	34.6	34.9	35.2	N. 62	25.3	25.5	25.6	25.7	25.8	25.7
2.6	ϵ Cygni	48	49.9	49.8	49.9	50.0	50.2	50.3	N. 33	49.6	49.7	49.8	49.9	49.9	49.8
1.3	Deneb	53	49	57.8	57.8	57.8	58.0	58.2	N. 45	08.6	08.7	08.8	08.9	08.9	08.8
3.2	α Indi	51	16.8	16.7	16.8	16.9	17.1	17.2	S. 47	25.5	25.5	25.6	25.7	25.7	25.6
2.1	Peacock	52	54	20.5	20.4	20.5	20.7	20.9	S. 56	51.4	51.5	51.6	51.7	51.7	51.6
2.3	γ Cygni	54	46.9	46.9	47.0	47.2	47.3	47.5	N. 40	08.0	08.2	08.3	08.4	08.3	08.3
0.9	Altair	51	62	46.2	46.2	46.3	46.4	46.5	N. 8	46.1	46.2	46.2	46.2	46.2	46.1
2.8	γ Aquilae	63	53.3	53.3	53.4	53.5	53.6	53.7	N. 10	31.2	31.3	31.4	31.4	31.4	31.3
3.0	δ Cygni	64	03.0	03.0	03.1	03.4	03.5	03.7	N. 45	02.3	02.4	02.5	02.6	02.5	02.4
3.2	Albireo	67	42.2	42.2	42.3	42.5	42.6	42.7	N. 27	52.8	52.9	53.0	53.0	53.0	52.9
3.0	π Sagittarii	73	07.7	07.7	07.8	07.9	08.0	08.0	S. 21	05.0	05.0	05.1	05.1	05.1	05.1
3.0	ζ Aquilae	74	05.2	05.2	05.3	05.4	05.5	05.5	N. 13	48.5	48.6	48.6	48.6	48.6	48.5
2.7	ζ Sagittarii	74	57.3	57.3	57.4	57.6	57.7	57.7	S. 29	56.1	56.1	56.1	56.2	56.1	56.1
2.1	Nunki	50	76	46.6	46.6	46.7	46.9	47.0	S. 26	20.6	20.7	20.7	20.7	20.7	20.7
0.1	Vega	49	81	05.1	05.2	05.4	05.6	05.7	N. 38	45.0	45.1	45.2	45.2	45.1	45.0
2.9	λ Sagittarii	83	35.9	35.9	36.0	36.1	36.2	36.2	S. 25	26.6	26.6	26.6	26.6	26.6	26.6
2.0	Kaus Australis	48	84	35.5	35.5	35.7	35.8	35.9	S. 34	24.2	24.2	24.2	24.2	24.2	24.2
2.8	δ Sagittarii	85	21.8	21.9	22.0	22.1	22.2	22.2	S. 29	50.7	50.7	50.7	50.7	50.7	50.7
3.1	γ Sagittarii	89	09.8	09.8	09.9	10.1	10.2	10.2	S. 30	25.5	25.5	25.5	25.5	25.5	25.5
2.4	Eltanin	47	91	03.9	04.1	04.3	04.5	04.7	N. 51	29.8	30.0	30.0	30.0	29.9	29.7
2.9	β Ophiuchi	94	36.3	36.3	36.4	36.6	36.6	36.6	N. 4	35.1	35.2	35.2	35.2	35.1	35.0
2.5	κ Scorpii	95	02.4	02.5	02.6	02.8	02.9	02.9	S. 39	00.6	00.7	00.7	00.7	00.7	00.6
2.0	θ Scorpii	96	21.5	21.6	21.7	21.9	22.0	21.9	S. 42	58.4	58.5	58.5	58.5	58.4	58.4
2.1	Rasalhague	46	96	42.6	42.7	42.8	42.9	43.0	N. 12	35.4	35.5	35.5	35.5	35.4	35.3
1.7	Shaula	45	97	14.9	15.0	15.1	15.3	15.3	S. 37	04.6	04.6	04.6	04.6	04.6	04.5
3.0	β Draconis	97	36.2	36.4	36.6	36.9	37.1	37.1	N. 52	20.1	20.2	20.2	20.1	20.0	19.9
3.0	α Arae	97	46.8	46.9	47.1	47.2	47.3	47.3	S. 49	50.8	50.9	50.9	50.9	50.8	50.7
2.8	ν Scorpii	97	57.6	57.7	57.8	58.0	58.1	58.0	S. 37	15.9	16.0	16.0	16.0	15.9	15.9
2.8	β Arae	99	28.2	28.4	28.6	28.8	28.9	28.9	S. 55	29.7	29.8	29.8	29.8	29.7	29.6
Var.†	α Herculis	101	46.5	46.5	46.7	46.8	46.9	46.8	N. 14	26.2	26.3	26.3	26.3	26.2	26.1
2.6	Sabik	44	102	57.3	57.4	57.5	57.6	57.6	S. 15	40.6	40.6	40.6	40.6	40.6	40.6
3.1	ζ Arae	106	08.3	08.4	08.6	08.8	08.9	08.9	S. 55	55.9	55.9	55.9	55.9	55.8	55.7
2.4	ϵ Scorpii	108	04.8	04.9	05.0	05.2	05.2	05.2	S. 34	13.5	13.5	13.5	13.4	13.4	13.4
1.9	Atria	43	108	50.9	51.1	51.5	51.8	51.9	S. 68	57.6	57.7	57.7	57.6	57.5	57.4
3.0	ζ Herculis	110	02.3	02.4	02.6	02.7	02.8	02.8	N. 31	40.6	40.7	40.7	40.6	40.5	40.4
2.7	ζ Ophiuchi	111	14.3	14.4	14.5	14.6	14.7	14.6	S. 10	29.3	29.3	29.3	29.3	29.3	29.3
2.9	τ Scorpii	111	37.6	37.7	37.8	38.0	38.0	37.9	S. 28	08.2	08.2	08.2	08.2	08.2	08.1
2.8	β Herculis	112	51.4	51.5	51.7	51.8	51.8	51.8	N. 21	34.6	34.7	34.7	34.6	34.5	34.4
1.2	Antares	42	113	14.2	14.3	14.4	14.5	14.5	S. 26	20.8	20.8	20.8	20.8	20.8	20.8
2.9	η Draconis	114	07.7	08.0	08.3	08.6	08.8	08.7	N. 61	36.4	36.5	36.5	36.4	36.2	36.1
3.0	δ Ophiuchi	116	55.0	55.1	55.2	55.3	55.3	55.3	S. 3	35.6	35.6	35.6	35.6	35.6	35.7
2.8	β Scorpii	119	12.0	12.1	12.2	12.3	12.3	12.2	S. 19	42.0	42.0	42.0	42.0	41.9	42.0
2.5	Dschubba	120	29.1	29.2	29.3	29.4	29.4	29.3	S. 22	30.7	30.7	30.7	30.7	30.7	30.7
3.0	π Scorpii	120	52.1	52.2	52.3	52.4	52.5	52.3	S. 26	00.2	00.2	00.2	00.2	00.1	00.1
3.0	β Trianguli Aust.	122	03.7	03.9	04.2	04.4	04.4	04.3	S. 63	18.9	18.9	18.9	18.8	18.7	18.6
2.8	α Serpentis	124	24.4	24.5	24.6	24.7	24.7	24.6	N. 6	33.0	33.0	33.0	33.0	32.9	32.8
2.3	Alphecca	41	126	44.1	44.2	44.4	44.5	44.4	N. 26	50.9	50.9	50.9	50.8	50.7	50.6
3.0	γ Lupi†	126	51.3	51.5	51.6	51.7	51.7	51.6	S. 41	02.3	02.3	02.3	02.3	02.2	02.2

† 3.0—3.7

† Not suitable for use with H.O. 214 (H.D. 486)

Mag.	Name and No.	S.H.A.						Declination					
		JAN.	FEB.	MAR.	APR.	MAY	JUNE	JAN.	FEB.	MAR.	APR.	MAY	JUNE
3.1	γ Ursæ Minoris †	129	49.2	48.6	48.1	47.8	47.7	58.2	58.1	58.2	58.3	58.4	58.6
3.1	γ Trianguli Aust.	131	11.6	11.1	10.6	10.2	10.1	31.9	31.9	32.0	32.1	32.3	32.4
2.7	β Libræ	131	16.6	16.4	16.2	16.1	16.0	14.3	14.4	14.4	14.4	14.4	14.4
2.8	β Lupi	135	60.6	60.3	60.1	59.9	59.8	58.4	58.5	58.6	58.7	58.7	58.8
2.2	β Ursæ Minoris 40	137	18.8	18.2	17.6	17.3	17.3	18.7	18.7	18.7	18.9	19.0	19.1
2.9	α Libræ	137	49.4	49.2	49.0	48.8	48.8	52.7	52.8	52.9	52.9	52.9	52.9
2.6	ε Bootis	139	11.0	10.7	10.5	10.4	10.3	14.2	14.1	14.1	14.2	14.3	14.4
2.9	α Lupi	140	10.2	09.9	09.6	09.5	09.4	13.0	13.1	13.2	13.3	13.4	13.5
0.1	α Centauri	140	46.0	45.6	45.2	45.0	45.0	40.1	40.2	40.3	40.4	40.6	40.7
2.6	η Centauri	141	44.8	44.5	44.2	44.1	44.0	59.0	59.1	59.2	59.3	59.4	59.4
3.0	γ Bootis	142	22.6	22.4	22.2	22.0	22.0	28.6	28.5	28.5	28.6	28.7	28.8
0.2	α Bootis	146	31.9	31.7	31.5	31.4	31.4	23.0	23.0	23.0	23.0	23.1	23.2
2.3	θ Centauri	148	54.3	54.1	53.9	53.8	53.7	10.5	10.6	10.7	10.8	10.9	10.9
0.9	β Centauri	149	44.1	43.7	43.5	43.3	43.3	10.8	10.9	11.0	11.2	11.3	11.4
3.1	ζ Centauri	151	43.5	43.2	43.0	42.9	42.9	05.5	05.6	05.8	05.9	06.0	06.1
2.8	η Bootis	151	47.7	47.5	47.3	47.2	47.3	35.5	35.4	35.4	35.5	35.5	35.6
1.9	η Ursæ Majoris 34	153	30.1	29.9	29.6	29.5	29.5	30.2	30.2	30.3	30.4	30.5	30.6
2.6	ε Centauri †	155	38.8	38.5	38.3	38.2	38.2	15.8	15.9	16.0	16.2	16.3	16.4
1.2	α Virginis	159	13.0	12.8	12.6	12.6	12.5	57.4	57.5	57.6	57.6	57.6	57.6
2.2	ζ Ursæ Majoris	159	24.8	24.5	24.3	24.2	24.3	07.5	07.5	07.6	07.7	07.8	07.9
2.9	ι Centauri	160	24.0	23.7	23.6	23.5	23.5	30.2	30.3	30.4	30.5	30.6	30.7
3.0	ε Virginis	164	56.5	56.3	56.2	56.1	56.2	10.0	10.0	10.0	10.0	10.0	10.1
2.9	α Canum Venat.	166	27.0	26.8	26.6	26.6	26.7	31.5	31.5	31.6	31.7	31.8	31.9
1.7	ε Ursæ Majoris 32	166	55.4	55.1	54.9	54.8	54.9	10.0	10.1	10.1	10.3	10.4	10.5
1.5	β Crucis	168	38.3	37.9	37.7	37.7	37.8	28.3	28.4	28.5	28.7	28.8	28.9
2.9	γ Virginis	170	04.8	04.6	04.4	04.4	04.5	14.1	14.2	14.3	14.3	14.3	14.2
2.4	γ Centauri	170	09.5	09.2	09.0	09.0	09.0	44.5	44.6	44.8	44.9	45.0	45.1
2.9	α Muscæ	171	16.9	16.5	16.3	16.2	16.4	54.9	55.1	55.2	55.4	55.5	55.6
2.8	β Corvi	171	54.9	54.7	54.6	54.5	54.6	10.8	10.9	11.0	11.0	11.1	11.1
1.6	γ Crucis	172	44.8	44.5	44.4	44.3	44.4	53.4	53.6	53.7	53.9	54.0	54.1
1.1	α Crucis	173	53.3	52.9	52.8	52.7	52.9	52.7	52.9	53.0	53.2	53.3	53.4
2.8	γ Corvi	176	32.9	32.7	32.7	32.6	32.7	19.5	19.6	19.7	19.7	19.7	19.7
2.9	δ Centauri	178	24.8	24.5	24.4	24.4	24.5	30.1	30.2	30.4	30.5	30.6	30.7
2.5	γ Ursæ Majoris	182	03.2	02.9	02.8	02.8	03.0	54.5	54.5	54.6	54.7	54.8	54.9
2.2	β Leonis	183	13.9	13.7	13.6	13.6	13.7	47.3	47.2	47.2	47.3	47.3	47.4
2.6	δ Leonis	191	59.4	59.2	59.1	59.2	59.3	44.1	44.1	44.1	44.2	44.2	44.3
3.2	ψ Ursæ Majoris	193	07.8	07.6	07.5	07.5	07.7	42.4	42.4	42.5	42.6	42.7	42.7
2.0	α Ursæ Majoris	194	39.9	39.6	39.5	39.6	39.8	57.5	57.5	57.7	57.8	57.9	57.9
2.4	β Ursæ Majoris	195	07.4	07.2	07.1	07.2	07.4	35.3	35.3	35.4	35.6	35.6	35.7
2.8	μ Velorum*	198	43.3	43.1	43.1	43.2	43.3	12.7	12.9	13.0	13.2	13.2	13.2
3.0	θ Carinæ* †	199	35.8	35.6	35.6	35.8	36.1	11.2	11.4	11.6	11.7	11.8	11.8
2.3	γ Leonis	205	32.5	32.3	32.3	32.4	32.5	02.2	02.2	02.2	02.3	02.3	02.3
1.3	α Leonis	208	25.4	25.3	25.2	25.3	25.4	09.4	09.3	09.3	09.4	09.4	09.4
3.1	ε Leonis	214	05.2	05.1	05.1	05.2	05.3	57.1	57.1	57.1	57.2	57.2	57.2
3.0	N Velorum	217	28.8	28.7	28.8	29.0	29.3	51.7	51.9	52.0	52.1	52.2	52.1
2.2	α Hydræ	218	34.7	34.6	34.6	34.7	34.8	29.4	29.5	29.6	29.6	29.6	29.5
2.6	κ Velorum*	219	45.8	45.7	45.8	46.0	46.3	50.6	50.8	50.9	51.0	51.1	51.0
2.2	ι Carinæ*	220	58.6	58.5	58.6	58.9	59.2	06.7	06.8	07.0	07.1	07.1	07.1
1.8	β Carinæ*	221	47.2	47.1	47.3	47.7	48.1	33.4	33.5	33.7	33.8	33.8	33.8
2.2	λ Velorum*	223	21.2	21.1	21.2	21.3	21.5	16.5	16.7	16.8	16.9	16.9	16.8
3.1	ι Ursæ Majoris	225	51.5	51.5	51.5	51.7	51.8	11.6	11.6	11.7	11.8	11.8	11.8
2.0	δ Velorum*	229	05.0	05.0	05.1	05.3	05.6	34.0	34.1	34.3	34.3	34.3	34.3
1.7	ε Carinæ*	234	33.5	33.6	33.7	34.0	34.3	23.1	23.3	23.4	23.5	23.4	23.4
1.9	γ Velorum*	237	54.5	54.6	54.7	54.9	55.1	13.4	13.5	13.6	13.7	13.7	13.6
2.9	ρ Puppis*	238	31.4	31.4	31.5	31.6	31.8	11.6	11.7	11.8	11.8	11.8	11.7
2.3	ζ Puppis*	239	26.4	26.4	26.5	26.7	27.0	53.7	53.8	53.9	54.0	53.9	53.8
1.2	β Geminorum	244	15.8	15.7	15.8	16.0	16.1	07.1	07.2	07.2	07.2	07.2	07.2
0.5	α Canis Minoris	245	40.9	40.8	40.9	41.1	41.2	19.4	19.4	19.3	19.4	19.4	19.4

* Formerly Argus

† Not suitable for use with H.O. 214 (H.D. 486)

Mag.	Name and No.	S.H.A.							Declination						
			JULY	AUG.	SEPT.	OCT.	NOV.	DEC.		JULY	AUG.	SEPT.	OCT.	NOV.	DEC.
3.1	γ Ursæ Minoris †	129	48.2	48.7	49.2	49.5	49.7	49.5	N. 71	58.7	58.7	58.6	58.5	58.3	58.1
3.1	γ Trianguli Aust.	131	10.3	10.6	11.0	11.2	11.2	10.9	S. 68	32.5	32.5	32.4	32.3	32.2	32.1
2.7	β Libræ	131	16.0	16.1	16.2	16.3	16.2	16.1	S. 9	14.4	14.4	14.4	14.4	14.4	14.4
2.8	β Lupi	135	59.9	60.0	60.2	60.3	60.2	60.0	S. 42	58.9	58.9	58.8	58.7	58.7	58.6
2.2	Kochab 40	137	18.0	18.5	19.1	19.4	19.5	19.3	N. 74	19.2	19.2	19.1	19.0	18.8	18.6
2.9	Zubenelgenubi 39	137	48.8	48.9	49.0	49.1	49.0	48.9	S. 15	52.9	52.9	52.8	52.8	52.8	52.9
2.6	ε Bootis	139	10.5	10.6	10.7	10.8	10.7	10.6	N. 27	14.5	14.5	14.4	14.3	14.2	14.1
2.9	α Lupi	140	09.5	09.7	09.8	09.9	09.8	09.6	S. 47	13.5	13.5	13.4	13.4	13.3	13.2
0.1	Rigil Kent. 38	140	45.2	45.5	45.7	45.8	45.7	45.5	S. 60	40.7	40.7	40.7	40.6	40.4	40.4
2.6	η Centauri	141	44.1	44.3	44.4	44.5	44.4	44.2	S. 41	59.4	59.4	59.4	59.3	59.2	59.2
3.0	γ Bootis	142	22.1	22.3	22.4	22.5	22.5	22.3	N. 38	28.9	28.9	28.9	28.7	28.6	28.4
0.2	Arcturus 37	146	31.5	31.6	31.7	31.8	31.7	31.5	N. 19	23.2	23.2	23.2	23.1	23.0	22.9
2.3	Menkent 36	148	53.8	54.0	54.1	54.1	54.0	53.8	S. 36	10.9	10.9	10.8	10.8	10.7	10.7
0.9	Hadad 35	149	43.5	43.8	44.0	44.1	43.9	43.6	S. 60	11.4	11.4	11.3	11.2	11.1	11.1
3.1	ζ Centauri	151	43.0	43.2	43.3	43.4	43.3	43.0	S. 47	06.1	06.1	06.0	05.9	05.8	05.8
2.8	η Bootis	151	47.3	47.4	47.5	47.6	47.5	47.3	N. 18	35.7	35.7	35.6	35.6	35.5	35.3
1.9	Alkaid 34	153	29.8	30.0	30.1	30.2	30.1	29.9	N. 49	30.7	30.6	30.6	30.4	30.2	30.1
2.6	ε Centauri †	155	38.4	38.6	38.8	38.8	38.7	38.4	S. 53	16.4	16.4	16.3	16.2	16.1	16.1
1.2	Spica 33	159	12.7	12.8	12.8	12.8	12.7	12.5	S. 10	57.6	57.6	57.5	57.5	57.6	57.6
2.2	Mizar 33	159	24.6	24.8	24.9	25.0	24.9	24.6	N. 55	08.0	07.9	07.8	07.6	07.5	07.3
2.9	ι Centauri	160	23.7	23.8	23.9	23.9	23.7	23.5	S. 36	30.6	30.6	30.5	30.5	30.4	30.4
3.0	ε Virginis	164	56.3	56.4	56.4	56.4	56.3	56.1	N. 11	10.1	10.1	10.1	10.1	10.0	09.9
2.9	Cor Caroli	166	26.8	26.9	27.0	27.0	26.9	26.6	N. 38	31.9	31.8	31.8	31.6	31.5	31.3
1.7	Alioth 32	166	55.3	55.5	55.6	55.6	55.4	55.1	N. 56	10.5	10.4	10.3	10.1	10.0	09.8
1.5	Mimosa 32	168	38.2	38.4	38.5	38.5	38.3	37.9	S. 59	28.9	28.8	28.7	28.6	28.5	28.5
2.9	γ Virginis	170	04.6	04.6	04.7	04.7	04.5	04.3	S. 1	14.2	14.2	14.2	14.2	14.3	14.3
2.4	Muhlifain 31	170	09.3	09.5	09.6	09.5	09.4	09.1	S. 48	45.0	45.0	44.9	44.8	44.7	44.7
2.9	α Muscæ	171	17.0	17.3	17.5	17.5	17.2	16.7	S. 68	55.6	55.6	55.4	55.3	55.2	55.2
2.8	β Corvi	171	54.7	54.8	54.9	54.8	54.7	54.4	S. 23	11.1	11.0	10.9	10.9	10.9	11.0
1.6	Gacrux 31	172	44.8	45.0	45.1	45.0	44.8	44.5	S. 56	54.1	54.0	53.9	53.7	53.7	53.7
1.1	Acrux 30	173	53.4	53.6	53.7	53.7	53.4	53.0	S. 62	53.4	53.3	53.2	53.0	52.9	52.9
2.8	Gienah 29	176	32.8	32.9	32.9	32.9	32.7	32.5	S. 17	19.7	19.6	19.6	19.6	19.6	19.7
2.9	δ Centauri	178	24.8	24.9	25.0	24.9	24.7	24.4	S. 50	30.6	30.6	30.4	30.3	30.3	30.3
2.5	Phecda 28	182	03.3	03.4	03.5	03.4	03.2	02.8	N. 53	54.8	54.8	54.6	54.5	54.3	54.2
2.2	Denebola 28	183	13.8	13.9	13.9	13.8	13.7	13.4	N. 14	47.4	47.4	47.4	47.3	47.2	47.1
2.6	δ Leonis	191	59.4	59.4	59.4	59.3	59.1	58.9	N. 20	44.3	44.2	44.2	44.1	44.0	43.9
3.2	ψ Ursæ Majoris	193	07.9	08.0	07.9	07.8	07.6	07.3	N. 44	42.7	42.6	42.5	42.4	42.2	42.1
2.0	Dubhe 27	194	40.3	40.4	40.3	40.2	39.8	39.4	N. 61	57.8	57.7	57.6	57.4	57.3	57.2
2.4	Merak 27	195	07.7	07.8	07.8	07.6	07.3	06.9	N. 56	35.6	35.5	35.4	35.2	35.1	35.0
2.8	μ Velorum*	198	43.6	43.7	43.7	43.5	43.3	43.0	S. 49	13.1	13.0	12.9	12.8	12.8	12.8
3.0	θ Carinæ*†	199	36.6	36.8	36.8	36.6	36.2	35.8	S. 64	11.7	11.6	11.5	11.4	11.3	11.4
2.3	Algeiba 26	205	32.6	32.6	32.6	32.4	32.2	32.0	N. 20	02.3	02.3	02.3	02.2	02.1	02.0
1.3	Regulus 26	208	25.5	25.5	25.5	25.3	25.1	24.9	N. 12	09.4	09.4	09.4	09.4	09.3	09.2
3.1	ε Leonis	214	05.4	05.4	05.3	05.1	04.9	04.7	N. 23	57.2	57.2	57.1	57.1	57.0	56.9
3.0	N Velorum	217	29.7	29.7	29.6	29.3	29.0	28.7	S. 56	52.0	51.9	51.7	51.6	51.6	51.7
2.2	Alphard 25	218	35.0	34.9	34.8	34.7	34.4	34.2	S. 8	29.5	29.4	29.4	29.4	29.4	29.5
2.6	κ Velorum*	219	46.6	46.6	46.5	46.3	46.0	45.6	S. 54	50.9	50.7	50.6	50.5	50.6	50.7
2.2	ι Carinæ*	220	59.6	59.6	59.4	59.2	58.8	58.5	S. 59	07.0	06.8	06.7	06.6	06.6	06.7
1.8	Miaplacidus 24	221	48.8	48.8	48.7	48.3	47.8	47.3	S. 69	33.7	33.5	33.4	33.3	33.3	33.4
2.2	Suhail 23	223	21.7	21.7	21.6	21.4	21.1	20.8	S. 43	16.7	16.6	16.4	16.4	16.4	16.5
3.1	ι Ursæ Majoris	225	52.0	51.9	51.7	51.5	51.2	50.8	N. 48	11.7	11.6	11.5	11.4	11.4	11.3
2.0	δ Velorum*	229	05.9	05.8	05.7	05.4	05.1	04.8	S. 54	34.1	34.0	33.9	33.8	33.8	34.0
1.7	Avior 22	234	34.6	34.6	34.4	34.1	33.8	33.4	S. 59	23.2	23.1	23.0	22.9	22.9	23.1
1.9	γ Velorum*	237	55.3	55.2	55.0	54.8	54.5	54.3	S. 47	13.4	13.3	13.2	13.1	13.2	13.3
2.9	ρ Puppis*	238	31.9	31.8	31.6	31.4	31.2	31.0	S. 24	11.6	11.5	11.4	11.4	11.5	11.6
2.3	ζ Puppis*	239	27.0	26.9	26.7	26.5	26.3	26.0	S. 39	53.7	53.6	53.5	53.4	53.5	53.6
1.2	Pollux 21	244	16.1	16.0	15.8	15.6	15.3	15.1	N. 28	07.2	07.2	07.1	07.1	07.1	07.0
0.5	Procyon 20	245	41.2	41.0	40.9	40.7	40.4	40.3	N. 5	19.5	19.5	19.5	19.5	19.4	19.4

* Formerly Argus

† Not suitable for use with H.O. 214 (H.D. 486)

Mag.	Name and No.		S.H.A.						Declination							
				JAN.	FEB.	MAR.	APR.	MAY	JUNE		JAN.	FEB.	MAR.	APR.	MAY	JUNE
1.6	α	Geminorum	246	58.0	58.0	58.1	58.3	58.4	58.4	N. 31	58.4	58.4	58.5	58.5	58.5	58.5
3.3	σ	Puppis*	247	59.7	59.7	59.9	60.1	60.2	60.3	S. 43	13.5	13.6	13.7	13.7	13.7	13.6
3.1	β	Canis Minoris	248	44.2	44.2	44.3	44.4	44.5	44.6	N. 8	22.0	22.0	21.9	22.0	22.0	22.0
2.4	η	Canis Majoris	249	21.4	21.4	21.5	21.7	21.8	21.9	S. 29	13.7	13.9	13.9	13.9	13.9	13.8
2.7	π	Puppis*	251	03.1	03.2	03.3	03.5	03.6	03.7	S. 37	01.8	01.9	02.0	02.0	01.9	01.8
2.0	δ	Canis Majoris	253	17.6	17.6	17.8	17.9	18.0	18.1	S. 26	20.0	20.1	20.2	20.2	20.1	20.0
3.1	$\circ$	Canis Majoris	254	38.8	38.8	38.9	39.1	39.2	39.2	S. 23	46.7	46.8	46.9	46.9	46.8	46.7
1.6	ϵ	Canis Majoris 19	255	43.3	43.3	43.5	43.6	43.7	43.8	S. 28	55.3	55.4	55.5	55.5	55.4	55.3
2.8	τ	Puppis*	257	45.0	45.1	45.3	45.5	45.8	45.9	S. 50	34.3	34.4	34.5	34.5	34.4	34.3
-1.6	α	Canis Majoris 18	259	08.3	08.4	08.5	08.6	08.7	08.7	S. 16	39.9	40.0	40.0	40.0	40.0	39.9
1.9	γ	Geminorum	261	07.9	07.9	08.0	08.1	08.2	08.2	N. 16	25.9	25.9	25.9	25.9	25.9	25.9
-0.9	α	Carinae* 17	264	13.2	13.4	13.6	13.9	14.1	14.1	S. 52	40.7	40.8	40.9	40.9	40.8	40.6
2.0	β	Canis Majoris	264	45.0	45.1	45.2	45.3	45.4	45.4	S. 17	56.4	56.4	56.5	56.5	56.4	56.3
2.7	θ	Aurigæ	270	43.8	43.9	44.0	44.2	44.2	44.2	N. 37	12.6	12.6	12.7	12.6	12.6	12.6
2.1	β	Aurigæ	270	49.7	49.7	49.9	50.1	50.2	50.2	N. 44	56.6	56.7	56.7	56.7	56.7	56.6
Var. ‡	α	Orionis 16	271	43.9	43.9	44.1	44.2	44.2	44.2	N. 7	23.9	23.9	23.9	23.9	23.9	23.9
2.2	κ	Orionis	273	31.2	31.2	31.4	31.5	31.6	31.6	S. 9	41.2	41.2	41.2	41.2	41.2	41.1
1.9	ζ	Orionis	275	17.9	18.0	18.1	18.2	18.3	18.3	S. 1	57.9	58.0	58.0	58.0	57.9	57.9
2.8	α	Columbæ	275	26.2	26.3	26.5	26.6	26.7	26.7	S. 34	05.9	06.0	06.0	06.0	05.9	05.8
3.0	ζ	Tauri	276	10.1	10.1	10.3	10.4	10.5	10.4	N. 21	07.1	07.1	07.1	07.1	07.1	07.1
1.8	ϵ	Orionis 15	276	26.3	26.4	26.5	26.6	26.7	26.6	S. 1	13.7	13.8	13.8	13.8	13.7	13.7
2.9	ι	Orionis	276	36.9	37.0	37.1	37.2	37.3	37.3	S. 5	56.3	56.3	56.3	56.3	56.3	56.2
2.7	α	Leporis	277	14.6	14.7	14.9	15.0	15.1	15.0	S. 17	51.2	51.3	51.3	51.2	51.2	51.1
2.5	δ	Orionis	277	29.6	29.7	29.8	29.9	30.0	29.9	S. 0	19.8	19.8	19.8	19.8	19.8	19.7
3.0	β	Leporis	278	21.2	21.3	21.4	21.5	21.6	21.6	S. 20	47.6	47.7	47.7	47.7	47.6	47.5
1.8	β	Tauri 14	279	02.4	02.4	02.6	02.7	02.8	02.7	N. 28	34.5	34.5	34.5	34.5	34.5	34.4
1.7	γ	Orionis 13	279	14.2	14.3	14.4	14.5	14.6	14.6	N. 6	18.8	18.7	18.7	18.7	18.8	18.8
0.2	α	Aurigæ 12	281	32.6	32.7	32.9	33.1	33.1	33.1	N. 45	57.6	57.6	57.6	57.6	57.5	57.5
0.3	β	Orionis 11	281	49.9	49.9	50.1	50.2	50.2	50.2	S. 8	15.0	15.0	15.0	15.0	14.9	14.9
2.9	β	Eridani	283	30.9	30.9	31.1	31.2	31.2	31.2	S. 5	08.3	08.4	08.4	08.4	08.3	08.2
2.9	ι	Aurigæ †	286	23.0	23.1	23.2	23.4	23.4	23.3	N. 33	06.3	06.3	06.3	06.3	06.2	06.2
1.1	α	Tauri 10	291	34.6	34.7	34.8	34.9	35.0	34.9	N. 16	25.8	25.8	25.8	25.8	25.8	25.8
3.2	γ	Eridani	300	56.8	56.9	57.0	57.1	57.1	57.0	S. 13	37.4	37.4	37.4	37.3	37.3	37.1
3.0	ϵ	Persei	301	11.3	11.5	11.6	11.7	11.7	11.6	N. 39	53.9	53.9	53.9	53.9	53.8	53.8
2.9	ζ	Persei	302	04.7	04.8	04.9	05.0	05.0	04.9	N. 31	46.1	46.1	46.1	46.0	46.0	46.0
3.0	η	Tauri	303	42.4	42.5	42.7	42.7	42.7	42.6	N. 23	59.1	59.1	59.1	59.0	59.0	59.0
1.9	α	Persei 9	309	36.8	37.0	37.2	37.3	37.3	37.1	N. 49	43.5	43.5	43.5	43.4	43.3	43.3
Var. §	β	Persei †	313	35.5	35.6	35.8	35.9	35.8	35.7	N. 40	48.4	48.4	48.4	48.3	48.3	48.2
2.8	α	Ceti 8	314	56.4	56.5	56.6	56.6	56.6	56.5	N. 3	56.1	56.1	56.1	56.1	56.1	56.2
3.1	θ	Eridani 7	315	48.3	48.4	48.6	48.7	48.7	48.5	S. 40	28.0	28.0	27.9	27.8	27.7	27.5
3.1	β	Trianguli	328	11.7	11.8	12.0	12.0	11.9	11.7	N. 34	48.3	48.2	48.2	48.1	48.1	48.1
2.2	α	Arietis 6	328	45.4	45.5	45.6	45.6	45.6	45.4	N. 23	16.7	16.7	16.6	16.6	16.6	16.6
2.2	γ	Andromedæ	329	37.5	37.6	37.7	37.7	37.6	37.4	N. 42	08.7	08.7	08.6	08.5	08.5	08.4
3.0	α	Hydri	330	37.1	37.4	37.6	37.7	37.7	37.4	S. 61	45.9	45.9	45.8	45.6	45.5	45.3
2.1	α	Ursæ Minoris †	330	44.7	54.5	61.8	64.4	61.5	54.4	N. 89	05.2	05.1	05.0	04.9	04.8	04.7
2.7	β	Arietis	331	52.8	52.9	52.9	52.9	52.8	52.6	N. 20	37.1	37.0	37.0	37.0	37.0	37.0
0.6	α	Eridani 5	335	56.3	56.5	56.7	56.7	56.6	56.4	S. 57	26.5	26.4	26.3	26.1	26.0	25.8
2.8	δ	Cassiopeia	339	11.2	11.4	11.6	11.6	11.4	11.1	N. 60	02.2	02.1	02.0	01.9	01.8	01.8
2.4	β	Andromedæ	343	06.9	07.0	07.1	07.1	06.9	06.7	N. 35	24.9	24.9	24.8	24.7	24.7	24.7
Var.	γ	Cassiopeia	346	24.9	25.1	25.3	25.2	25.0	24.7	N. 60	30.6	30.5	30.4	30.2	30.2	30.1
2.2	β	Ceti 4	349	35.7	35.8	35.8	35.8	35.6	35.4	S. 18	12.2	12.2	12.2	12.1	12.0	11.9
2.5	α	Cassiopeia	350	25.8	26.0	26.1	26.0	25.8	25.5	N. 56	19.6	19.5	19.4	19.3	19.2	19.2
2.4	α	Phœnicis 2	353	54.9	55.0	55.1	55.0	54.9	54.6	S. 42	31.3	31.3	31.3	31.0	30.9	30.8
2.9	β	Hydri †	354	05.2	05.7	05.9	05.8	05.3	04.7	S. 77	28.8	28.7	28.5	28.3	28.1	28.0
2.9	γ	Pegasi	357	11.8	11.9	11.9	11.8	11.7	11.4	N. 14	58.0	58.0	57.9	57.9	57.9	58.0
2.4	β	Cassiopeia	358	13.8	14.0	14.1	14.0	13.7	13.4	N. 58	56.3	56.2	56.1	56.0	55.9	55.9
2.2	α	Andromedæ 1	358	24.6	24.7	24.7	24.7	24.5	24.3	N. 28	52.6	52.5	52.4	52.4	52.4	52.4

* Formerly Argus

‡ 0.1—1.2

§ 2.3—3.5

|| Irregular variable; 1958 mag. 2.8

† Not suitable for use with H.O. 214 (H.D. 486)

Mag.	Name and No.	S.H.A.							Declination						
			JULY	AUG.	SEPT.	OCT.	NOV.	DEC.		JULY	AUG.	SEPT.	OCT.	NOV.	DEC.
1.6	<i>Castor</i>	246	58.4	58.2	58.0	57.8	57.5	57.3	N. 31	58.4	58.4	58.4	58.3	58.3	58.3
3.3	σ <i>Puppis*</i>	247	60.3	60.2	60.0	59.8	59.5	59.3	S. 43	13.4	13.3	13.2	13.2	13.2	13.4
3.1	β <i>Canis Minoris</i>	248	44.5	44.4	44.2	44.0	43.8	43.6	N. 8	22.1	22.1	22.1	22.1	22.0	22.0
2.4	η <i>Canis Majoris</i>	249	21.9	21.8	21.6	21.4	21.1	20.9	S. 29	13.7	13.6	13.5	13.5	13.6	13.7
2.7	π <i>Puppis*</i>	251	03.7	03.6	03.4	03.2	02.9	02.7	S. 37	01.7	01.6	01.5	01.5	01.6	01.7
2.0	<i>Wezen</i>	253	18.1	17.9	17.7	17.5	17.3	17.1	S. 26	19.9	19.8	19.7	19.7	19.8	19.9
3.1	$\circ$ <i>Canis Majoris</i>	254	39.2	39.1	38.9	38.6	38.4	38.3	S. 23	46.6	46.5	46.4	46.4	46.5	46.6
1.6	<i>Adhara</i>	19 255	43.8	43.6	43.4	43.2	43.0	42.8	S. 28	55.2	55.1	55.0	55.0	55.1	55.2
2.8	τ <i>Puppis*</i>	257	45.8	45.7	45.4	45.1	44.9	44.7	S. 50	34.1	34.0	33.9	33.9	34.0	34.1
-1.6	<i>Sirius</i>	18 259	08.7	08.6	08.4	08.2	07.9	07.8	S. 16	39.8	39.7	39.6	39.7	39.7	39.8
1.9	<i>Alhena</i>	261	08.1	08.0	07.8	07.5	07.3	07.2	N. 16	25.9	25.9	26.0	25.9	25.9	25.9
-0.9	<i>Canopus</i>	17 264	14.1	13.9	13.7	13.4	13.1	12.9	S. 52	40.5	40.3	40.2	40.3	40.4	40.5
2.0	<i>Mirzam</i>	264	45.4	45.2	45.0	44.8	44.6	44.5	S. 17	56.2	56.1	56.0	56.1	56.1	56.2
2.7	θ <i>Aurigæ</i>	270	44.1	43.9	43.6	43.4	43.1	42.9	N. 37	12.5	12.5	12.5	12.5	12.5	12.6
2.1	<i>Menkalinan</i>	270	50.0	49.8	49.5	49.2	48.9	48.7	N. 44	56.5	56.5	56.5	56.5	56.5	56.6
Var. ‡	<i>Betelgeuse</i>	16 271	44.1	43.9	43.7	43.5	43.3	43.2	N. 7	24.0	24.0	24.1	24.0	24.0	24.0
2.2	κ <i>Orionis</i>	273	31.5	31.3	31.1	30.9	30.7	30.6	S. 9	41.0	40.9	40.9	40.9	40.9	41.0
1.9	<i>Alnitak</i>	275	18.2	18.0	17.8	17.6	17.4	17.3	S. 1	57.8	57.7	57.7	57.7	57.7	57.8
2.8	<i>Phact</i>	275	26.6	26.5	26.2	26.0	25.8	25.7	S. 34	05.6	05.5	05.5	05.5	05.6	05.7
3.0	ζ <i>Tauri</i>	276	10.3	10.1	09.9	09.6	09.5	09.3	N. 21	07.1	07.1	07.1	07.1	07.2	07.1
1.8	<i>Alnilam</i>	15 276	26.5	26.3	26.1	25.9	25.7	25.6	S. 1	13.6	13.5	13.5	13.5	13.5	13.6
2.9	ι <i>Orionis</i>	276	37.2	37.0	36.8	36.6	36.4	36.3	S. 5	56.1	56.0	56.0	56.0	56.0	56.1
2.7	α <i>Leporis</i>	277	14.9	14.7	14.5	14.3	14.2	14.0	S. 17	51.0	50.9	50.8	50.8	50.9	51.0
2.5	δ <i>Orionis</i>	277	29.8	29.6	29.4	29.2	29.0	28.9	S. 0	19.7	19.6	19.6	19.6	19.6	19.7
3.0	β <i>Leporis</i>	278	21.5	21.3	21.1	20.9	20.7	20.6	S. 20	47.4	47.3	47.2	47.3	47.3	47.5
1.8	<i>Elnath</i>	14 279	02.6	02.4	02.1	01.9	01.7	01.6	N. 28	34.4	34.4	34.5	34.5	34.5	34.5
1.7	<i>Bellatrix</i>	13 279	14.4	14.2	14.0	13.8	13.6	13.5	N. 6	18.9	18.9	19.0	19.0	18.9	18.9
0.2	<i>Capella</i>	12 281	32.9	32.6	32.3	32.0	31.8	31.6	N. 45	57.4	57.4	57.4	57.5	57.5	57.6
0.3	<i>Rigel</i>	11 281	50.1	49.9	49.7	49.5	49.3	49.2	S. 8	14.7	14.7	14.6	14.6	14.7	14.8
2.9	β <i>Eridani</i>	283	31.1	30.9	30.6	30.5	30.3	30.2	S. 5	08.1	08.1	08.0	08.0	08.1	08.2
2.9	ι <i>Aurigæ †</i>	286	23.2	22.9	22.7	22.4	22.2	22.1	N. 33	06.2	06.2	06.2	06.3	06.3	06.4
1.1	<i>Aldebaran</i>	10 291	34.7	34.5	34.3	34.1	33.9	33.8	N. 16	25.9	25.9	25.9	26.0	26.0	26.0
3.2	γ <i>Eridani</i>	300	56.8	56.6	56.4	56.2	56.1	56.1	S. 13	37.0	37.0	36.9	36.9	37.0	37.1
3.0	ϵ <i>Persei</i>	301	11.4	11.1	10.8	10.6	10.5	10.4	N. 39	53.8	53.8	53.9	53.9	54.0	54.1
2.9	ζ <i>Persei</i>	302	04.7	04.5	04.2	04.0	03.9	03.8	N. 31	46.0	46.1	46.1	46.2	46.2	46.3
3.0	<i>Alcyone</i>	303	42.4	42.2	41.9	41.8	41.6	41.6	N. 23	59.1	59.1	59.2	59.2	59.3	59.3
1.9	<i>Mirfak</i>	9 309	36.8	36.5	36.2	36.0	35.8	35.8	N. 49	43.2	43.3	43.4	43.5	43.6	43.7
Var. §	<i>Algol †</i>	313	35.4	35.1	34.9	34.7	34.6	34.5	N. 40	48.2	48.3	48.4	48.5	48.6	48.6
2.8	<i>Menkar</i>	8 314	56.3	56.1	55.9	55.7	55.6	55.6	N. 3	56.3	56.4	56.4	56.4	56.4	56.4
3.1	<i>Acamar</i>	7 315	48.3	48.1	47.8	47.6	47.6	47.6	S. 40	27.4	27.3	27.3	27.4	27.5	27.7
3.1	β <i>Trianguli</i>	328	11.4	11.2	11.0	10.8	10.8	10.8	N. 34	48.1	48.2	48.3	48.4	48.5	48.5
2.2	<i>Hamal</i>	6 328	45.1	44.9	44.7	44.6	44.6	44.6	N. 23	16.7	16.8	16.9	16.9	17.0	17.0
2.2	<i>Almak</i>	329	37.2	36.9	36.7	36.5	36.5	36.5	N. 42	08.5	08.6	08.7	08.8	08.9	09.0
3.0	α <i>Hydri</i>	330	37.0	36.6	36.3	36.2	36.3	36.3	S. 61	45.2	45.2	45.2	45.4	45.5	45.6
2.1	<i>Polaris †</i>	330	44.6	44.5	44.4	44.3	44.2	44.1	N. 89	04.7	04.7	04.8	05.0	05.2	05.4
2.7	<i>Sheratan</i>	331	52.5	52.2	52.1	52.0	51.9	51.9	N. 20	37.1	37.2	37.2	37.3	37.3	37.4
0.6	<i>Achernar</i>	5 335	56.0	55.7	55.4	55.3	55.4	55.5	S. 57	25.7	25.7	25.8	25.9	26.0	26.1
2.8	<i>Ruchbah</i>	339	10.7	10.4	10.1	10.0	10.0	10.1	N. 60	01.8	01.9	02.1	02.2	02.4	02.5
2.4	<i>Mirach</i>	343	06.4	06.2	06.0	06.0	06.0	06.0	N. 35	24.8	24.9	25.0	25.1	25.2	25.2
Var.	γ <i>Cassiopeia</i>	346	24.3	23.9	23.7	23.6	23.7	23.9	S. 60	30.2	30.3	30.5	30.6	30.8	30.8
2.2	<i>Diphda</i>	4 349	35.2	35.0	34.9	34.8	34.8	34.9	S. 18	11.8	11.7	11.7	11.8	11.8	11.9
2.5	<i>Schedar</i>	3 350	25.2	24.9	24.7	24.6	24.7	24.8	N. 56	19.3	19.4	19.6	19.7	19.9	19.9
2.4	<i>Ankaa</i>	2 353	54.3	54.1	53.9	53.9	54.0	54.1	S. 42	30.7	30.7	30.7	30.9	31.0	31.0
2.9	β <i>Hydri †</i>	354	03.9	03.2	02.7	02.7	03.1	03.7	S. 77	28.0	28.0	28.2	28.3	28.4	28.5
2.9	<i>Algenib</i>	357	11.2	11.0	10.9	10.9	10.9	11.0	N. 14	58.1	58.2	58.3	58.3	58.4	58.3
2.4	<i>Caph</i>	358	13.0	12.7	12.6	12.6	12.7	12.9	N. 58	56.0	56.1	56.3	56.4	56.6	56.6
2.2	<i>Alpheratz</i>	1 358	24.0	23.8	23.7	23.7	23.7	23.8	N. 28	52.5	52.7	52.8	52.9	52.9	52.9

* Formerly Argus

‡ 0.1—1.2

§ 2.3—3.5

|| Irregular variable; 1958 mag. 2.8

† Not suitable for use with H.O. 214 (H.D. 486)

FOR DETERMINING LATITUDE FROM SEXTANT ALTITUDE AND FOR AZIMUTH

L.H.A. ARIES	0°- 9°	10°- 19°	20°- 29°	30°- 39°	40°- 49°	50°- 59°	60°- 69°	70°- 79°	80°- 89°	90°- 99°	100°- 109°	110°- 119°
	a_0	a_0	a_0	a_0	a_0	a_0	a_0	a_0	a_0	a_0	a_0	a_0
0	0 11.0	0 07.0	0 04.5	0 03.8	0 04.8	0 07.4	0 11.7	0 17.3	0 24.3	0 32.3	0 41.1	0 50.4
1	10.5	06.6	04.4	03.8	05.0	07.8	12.2	18.0	25.0	33.2	42.0	51.4
2	10.0	06.3	04.3	03.9	05.2	08.2	12.7	18.6	25.8	34.0	43.0	52.3
3	09.6	06.1	04.1	03.9	05.4	08.5	13.2	19.3	26.6	34.9	43.9	53.3
4	09.2	05.8	04.0	04.0	05.6	08.9	13.8	20.0	27.4	35.7	44.8	54.3
5	0 08.8	0 05.5	0 04.0	0 04.1	0 05.9	0 09.4	0 14.3	0 20.7	0 28.2	0 36.6	0 45.7	0 55.2
6	08.4	05.3	03.9	04.2	06.2	09.8	14.9	21.4	29.0	37.5	46.7	56.2
7	08.0	05.1	03.8	04.3	06.5	10.2	15.5	22.1	29.8	38.4	47.6	57.1
8	07.6	04.9	03.8	04.4	06.8	10.7	16.1	22.8	30.6	39.3	48.5	58.1
9	07.3	04.7	03.8	04.6	07.1	11.2	16.7	23.5	31.5	40.2	49.5	0 59.1
10	0 07.0	0 04.5	0 03.8	0 04.8	0 07.4	0 11.7	0 17.3	0 24.3	0 32.3	0 41.1	0 50.4	1 00.0
Lat.	a_1	a_1	a_1	a_1	a_1	a_1	a_1	a_1	a_1	a_1	a_1	a_1
0	0.5	0.6	0.6	0.6	0.6	0.5	0.4	0.3	0.2	0.2	0.1	0.1
10	.5	.6	.6	.6	.6	.5	.4	.4	.3	.2	.2	.2
20	.5	.6	.6	.6	.6	.5	.5	.4	.3	.3	.3	.2
30	.6	.6	.6	.6	.6	.5	.5	.5	.4	.4	.4	.3
40	0.6	0.6	0.6	0.6	0.6	0.6	0.5	0.5	0.5	0.5	0.5	0.4
45	.6	.6	.6	.6	.6	.6	.6	.6	.5	.5	.5	.5
50	.6	.6	.6	.6	.6	.6	.6	.6	.6	.6	.6	.6
55	.6	.6	.6	.6	.6	.6	.6	.7	.7	.7	.7	.7
60	.6	.6	.6	.6	.6	.6	.7	.7	.8	.8	.8	.8
62	0.7	0.6	0.6	0.6	0.6	0.7	0.7	0.8	0.8	0.9	0.9	0.9
64	.7	.6	.6	.6	.6	.7	.7	.8	.9	0.9	1.0	1.0
66	.7	.6	.6	.6	.6	.7	.8	.8	0.9	1.0	1.0	1.1
68	0.7	0.6	0.6	0.6	0.6	0.7	0.8	0.9	1.0	1.1	1.1	1.2
Month	a_2	a_2	a_2	a_2	a_2	a_2	a_2	a_2	a_2	a_2	a_2	a_2
Jan.	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.7	0.7	0.7	0.6
Feb.	.7	.7	.8	.8	.8	.8	.9	.9	.8	.8	.8	.8
Mar.	.6	.6	.7	.7	.8	.8	.8	.9	.8	.9	.9	.9
Apr.	0.4	0.5	0.5	0.6	0.6	0.7	0.7	0.8	0.8	0.9	0.9	0.9
May	.3	.3	.4	.4	.5	.5	.6	.7	.7	.8	.8	.9
June	.3	.3	.3	.3	.4	.4	.5	.5	.6	.6	.7	.8
July	0.3	0.3	0.3	0.3	0.3	0.3	0.4	0.4	0.4	0.5	0.5	0.6
Aug.	.4	.4	.4	.3	.3	.3	.3	.3	.4	.4	.4	.5
Sept.	.6	.5	.5	.4	.4	.4	.3	.3	.3	.3	.3	.3
Oct.	0.8	0.7	0.7	0.6	0.6	0.5	0.4	0.4	0.4	0.3	0.3	0.3
Nov.	1.0	0.9	0.9	0.8	.7	.7	.6	.5	.5	.4	.3	.3
Dec.	1.1	1.0	1.0	1.0	0.9	0.8	0.7	0.6	0.6	0.5	0.5	0.4
Lat.	AZIMUTH											
0	0.4	0.2	0.1	359.9	359.7	359.6	359.5	359.3	359.2	359.2	359.1	359.1
20	0.4	0.2	0.1	359.9	359.7	359.6	359.4	359.3	359.2	359.1	359.1	359.0
40	0.5	0.3	0.1	359.9	359.7	359.5	359.3	359.1	359.0	358.9	358.9	358.8
50	0.6	0.4	0.1	359.9	359.6	359.4	359.2	359.0	358.8	358.7	358.6	358.6
55	0.7	0.4	0.1	359.8	359.6	359.3	359.0	358.8	358.7	358.5	358.4	358.4
60	0.8	0.5	0.1	359.8	359.5	359.2	358.9	358.7	358.5	358.3	358.2	358.2
65	0.9	0.6	0.2	359.8	359.4	359.0	358.7	358.4	358.2	358.0	357.9	357.8

Latitude = corrected sextant altitude - $1^\circ + a_0 + a_1 + a_2$

The table is entered with L.H.A. Aries to determine the column to be used; each column refers to a range of 10° . a_0 is taken, with mental interpolation, from the upper table with the units of L.H.A. Aries in degrees as argument; a_1 , a_2 are taken, without interpolation, from the second and third tables with arguments latitude and month respectively. a_0 , a_1 , a_2 are always positive. The final table gives the azimuth of *Polaris*.

POLARIS (POLE STAR) TABLES, 1961

275

FOR DETERMINING LATITUDE FROM SEXTANT ALTITUDE AND FOR AZIMUTH

L.H.A. ARIES	120°- 129°	130°- 139°	140°- 149°	150°- 159°	160°- 169°	170°- 179°	180°- 189°	190°- 199°	200°- 209°	210°- 219°	220°- 229°	230°- 239°
	a_0	a_0	a_0	a_0	a_0	a_0	a_0	a_0	a_0	a_0	a_0	a_0
0	I 00.0	I 09.5	I 18.7	I 27.3	I 35.0	I 41.6	I 46.9	I 50.8	I 53.1	I 53.8	I 52.9	I 50.3
1	01.0	10.5	19.6	28.1	35.7	42.2	47.4	51.1	53.2	53.8	52.7	50.0
2	01.9	11.4	20.5	28.9	36.4	42.8	47.8	51.3	53.3	53.7	52.5	49.6
3	02.9	12.3	21.4	29.7	37.1	43.3	48.2	51.6	53.5	53.7	52.3	49.2
4	03.9	13.3	22.2	30.5	37.8	43.9	48.6	51.9	53.6	53.6	52.0	48.9
5	I 04.8	I 14.2	I 23.1	I 31.3	I 38.4	I 44.4	I 49.0	I 52.1	I 53.6	I 53.5	I 51.8	I 48.5
6	05.8	15.1	23.9	32.0	39.1	44.9	49.4	52.3	53.7	53.4	51.5	48.0
7	06.7	16.0	24.8	32.8	39.7	45.4	49.8	52.6	53.7	53.3	51.2	47.6
8	07.7	16.9	25.6	33.5	40.4	45.9	50.1	52.7	53.8	53.2	51.0	47.2
9	08.6	17.8	26.5	34.3	41.0	46.4	50.4	52.9	53.8	53.0	50.6	46.7
10	I 09.5	I 18.7	I 27.3	I 35.0	I 41.6	I 46.9	I 50.8	I 53.1	I 53.8	I 52.9	I 50.3	I 46.2
Lat.	a_1	a_1	a_1	a_1	a_1	a_1	a_1	a_1	a_1	a_1	a_1	a_1
0	0.1	0.1	0.2	0.3	0.3	0.4	0.5	0.6	0.6	0.6	0.6	0.5
10	.2	.2	.2	.3	.4	.5	.5	.6	.6	.6	.6	.5
20	.2	.3	.3	.4	.4	.5	.5	.6	.6	.6	.6	.5
30	.3	.4	.4	.4	.5	.5	.6	.6	.6	.6	.6	.5
40	0.4	0.5	0.5	0.5	0.5	0.5	0.6	0.6	0.6	0.6	0.6	0.6
45	.5	.5	.5	.5	.6	.6	.6	.6	.6	.6	.6	.6
50	.6	.6	.6	.6	.6	.6	.6	.6	.6	.6	.6	.6
55	.7	.7	.7	.7	.7	.6	.6	.6	.6	.6	.6	.6
60	.8	.8	.8	.8	.7	.7	.6	.6	.6	.6	.6	.6
62	0.9	0.9	0.8	0.8	0.8	0.7	0.7	0.6	0.6	0.6	0.6	0.7
64	1.0	0.9	0.9	.9	.8	.7	.7	.6	.6	.6	.6	.7
66	1.1	1.0	1.0	0.9	.8	.8	.7	.6	.6	.6	.6	.7
68	1.2	1.1	1.1	1.0	0.9	0.8	0.7	0.6	0.6	0.6	0.6	0.7
Month	a_2	a_2	a_2	a_2	a_2	a_2	a_2	a_2	a_2	a_2	a_2	a_2
Jan.	0.6	0.6	0.5	0.5	0.5	0.5	0.4	0.4	0.4	0.4	0.4	0.4
Feb.	.8	.7	.7	.6	.6	.6	.5	.5	.4	.4	.4	.4
Mar.	.9	.9	.8	.8	.7	.7	.6	.6	.5	.5	.4	.4
Apr.	0.9	0.9	0.9	0.9	0.9	0.8	0.8	0.7	0.7	0.6	0.6	0.5
May	.9	.9	1.0	1.0	.9	.9	.9	.9	.8	.8	.7	.7
June	.8	.9	0.9	0.9	.9	.9	.9	.9	.9	.9	.8	.8
July	0.7	0.7	0.8	0.8	0.8	0.9	0.9	0.9	0.9	0.9	0.9	0.9
Aug.	.5	.5	.6	.6	.7	.7	.8	.8	.8	.9	.9	.9
Sept.	.4	.4	.4	.5	.5	.5	.6	.7	.7	.8	.8	.8
Oct.	0.3	0.3	0.3	0.3	0.3	0.4	0.4	0.5	0.5	0.6	0.6	0.7
Nov.	.3	.2	.2	.2	.2	.2	.2	.3	.3	.4	.5	.5
Dec.	0.3	0.3	0.2	0.2	0.1	0.1	0.1	0.2	0.2	0.2	0.3	0.4
Lat.	AZIMUTH											
0	359.1	359.1	359.2	359.3	359.4	359.5	359.6	359.8	359.9	0.1	0.3	0.4
20	359.0	359.1	359.1	359.2	359.3	359.4	359.6	359.8	359.9	0.1	0.3	0.4
40	358.8	358.9	358.9	359.0	359.2	359.3	359.5	359.7	359.9	0.1	0.3	0.5
50	358.6	358.6	358.7	358.9	359.0	359.2	359.4	359.7	359.9	0.1	0.4	0.6
55	358.4	358.5	358.6	358.7	358.9	359.1	359.4	359.6	359.9	0.2	0.4	0.7
60	358.2	358.3	358.4	358.5	358.8	359.0	359.3	359.6	359.9	0.2	0.5	0.8
65	357.8	357.9	358.1	358.3	358.5	358.8	359.1	359.5	359.8	0.2	0.6	0.9

ILLUSTRATION

On 1961 February 9 at G.M.T.
22^h 17^m 50^s in longitude
W. 27° 34' the corrected sextant
altitude of *Polaris* was 49° 31' 6".

From the daily pages :

G.H.A. Aries (22^h) 109 44.9
Increment (17^m 50^s) 4 28.2
Longitude (west) -27 34
L.H.A. Aries 86 39

Corr. Sext. Alt.

a_0 (argument 86° 39') 49 31.6
 a_1 (lat. 50° approx.) 0 29.5
 a_2 (February) 0 8
Sum - 1° - Lat. = 49 02.5

POLARIS (POLE STAR) TABLES, 1961

FOR DETERMINING LATITUDE FROM SEXTANT ALTITUDE AND FOR AZIMUTH

L.H.A. ARIES	240°- 249°	250°- 259°	260°- 269°	270°- 279°	280°- 289°	290°- 299°	300°- 309°	310°- 319°	320°- 329°	330°- 339°	340°- 349°	350°- 359°
	<i>a</i> ₀	<i>a</i> ₀	<i>a</i> ₀	<i>a</i> ₀	<i>a</i> ₀	<i>a</i> ₀	<i>a</i> ₀	<i>a</i> ₀	<i>a</i> ₀	<i>a</i> ₀	<i>a</i> ₀	<i>a</i> ₀
0	I 46.2	I 40.7	I 33.9	I 26.1	I 17.4	I 08.2	0 58.6	0 49.1	0 39.8	0 31.1	0 23.2	0 16.4
1	45.7	40.1	33.2	25.3	16.5	07.2	57.7	48.1	38.9	30.3	22.5	15.8
2	45.2	39.4	32.5	24.4	15.6	06.3	56.7	47.2	38.0	29.4	21.8	15.2
3	44.7	38.8	31.7	23.6	14.7	05.3	55.8	46.3	37.1	28.6	21.1	14.7
4	44.2	38.1	30.9	22.7	13.8	04.4	54.8	45.3	36.2	27.8	20.4	14.1
5	I 43.6	I 37.5	I 30.1	I 21.8	I 12.9	I 03.4	0 53.8	0 44.4	0 35.4	0 27.0	0 19.7	0 13.5
6	43.1	36.8	29.4	21.0	11.9	02.5	52.9	43.5	34.5	26.3	19.0	13.0
7	42.5	36.1	28.6	20.1	11.0	01.5	51.9	42.5	33.6	25.5	18.3	12.5
8	41.9	35.4	27.7	19.2	10.1	I 00.6	51.0	41.6	32.8	24.7	17.7	11.9
9	41.3	34.7	26.9	18.3	09.1	0 59.6	50.0	40.7	31.9	24.0	17.1	11.4
10	I 40.7	I 33.9	I 26.1	I 17.4	I 08.2	0 58.6	0 49.1	0 39.8	0 31.1	0 23.2	0 16.4	0 11.0
Lat.	<i>a</i> ₁	<i>a</i> ₁	<i>a</i> ₁	<i>a</i> ₁	<i>a</i> ₁	<i>a</i> ₁	<i>a</i> ₁	<i>a</i> ₁	<i>a</i> ₁	<i>a</i> ₁	<i>a</i> ₁	<i>a</i> ₁
0	0.4	0.3	0.2	0.2	0.1	0.1	0.1	0.1	0.2	0.3	0.3	0.4
10	.4	.4	.3	.2	.2	.2	.2	.2	.2	.3	.4	.5
20	.5	.4	.3	.3	.3	.2	.2	.3	.3	.4	.4	.5
30	.5	.5	.4	.4	.4	.3	.3	.4	.4	.4	.5	.5
40	0.5	0.6	0.5	0.5	0.5	0.4	0.4	0.5	0.5	0.5	0.5	0.5
45	.6	.6	.5	.5	.5	.5	.5	.5	.5	.5	.6	.6
50	.6	.6	.6	.6	.6	.6	.6	.6	.6	.6	.6	.6
55	.6	.7	.7	.7	.7	.7	.7	.7	.7	.7	.7	.6
60	.7	.7	.8	.8	.8	.8	.8	.8	.8	.8	.7	.7
62	0.7	0.8	0.8	0.9	0.9	0.9	0.9	0.9	0.8	0.8	0.8	0.7
64	.7	.8	.9	0.9	1.0	1.0	1.0	0.9	0.9	.9	.8	.7
66	.8	.8	0.9	1.0	1.0	1.1	1.1	1.0	1.0	0.9	.8	.8
68	0.8	0.9	1.0	1.1	1.1	1.2	1.2	1.1	1.1	1.0	0.9	0.8
Month	<i>a</i> ₂	<i>a</i> ₂	<i>a</i> ₂	<i>a</i> ₂	<i>a</i> ₂	<i>a</i> ₂	<i>a</i> ₂	<i>a</i> ₂	<i>a</i> ₂	<i>a</i> ₂	<i>a</i> ₂	<i>a</i> ₂
Jan.	0.4	0.4	0.5	0.5	0.5	0.6	0.6	0.6	0.7	0.7	0.7	0.7
Feb.	.3	.3	.4	.4	.4	.4	.4	.5	.5	.6	.6	.6
Mar.	.4	.3	.3	.3	.3	.3	.3	.3	.4	.4	.5	.5
Apr.	0.5	0.4	0.4	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.4
May	.6	.5	.5	.4	.4	.3	.3	.3	.2	.2	.3	.3
June	.7	.7	.6	.6	.5	.4	.4	.3	.3	.3	.3	.3
July	0.8	0.8	0.8	0.7	0.7	0.6	0.5	0.5	0.4	0.4	0.4	0.3
Aug.	.9	.9	.8	.8	.8	.7	.7	.7	.6	.6	.5	.5
Sept.	.9	.9	.9	.9	.9	.9	.8	.8	.8	.7	.7	.7
Oct.	0.8	0.8	0.8	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.8
Nov.	.6	.7	.7	.8	.9	.9	.9	1.0	1.0	1.0	1.0	1.0
Dec.	0.4	0.5	0.6	0.7	0.7	0.8	0.9	0.9	1.0	1.0	1.1	1.1
Lat.	AZIMUTH											
0	0.5	0.7	0.8	0.8	0.9	0.9	0.9	0.9	0.8	0.7	0.6	0.5
20	0.6	0.7	0.8	0.9	0.9	1.0	1.0	0.9	0.9	0.8	0.7	0.6
40	0.7	0.8	1.0	1.1	1.1	1.2	1.2	1.2	1.1	1.0	0.8	0.7
50	0.8	1.0	1.2	1.3	1.4	1.4	1.4	1.4	1.3	1.2	1.0	0.8
55	0.9	1.1	1.3	1.4	1.5	1.6	1.6	1.5	1.4	1.3	1.1	0.9
60	1.1	1.3	1.5	1.7	1.8	1.8	1.8	1.8	1.7	1.5	1.3	1.1
65	1.2	1.5	1.7	2.0	2.1	2.1	2.2	2.1	2.0	1.8	1.5	1.3

Latitude = corrected sextant altitude - 1° + *a*₀ + *a*₁ + *a*₂

The table is entered with L.H.A. Aries to determine the column to be used; each column refers to a range of 10°. *a*₀ is taken, with mental interpolation, from the upper table with the units of L.H.A. Aries in degrees as argument; *a*₁, *a*₂ are taken, without interpolation, from the second and third tables with arguments latitude and month respectively. *a*₀, *a*₁, *a*₂ are always positive. The final table gives the azimuth of *Polaris*.

CONVERSION OF ARC TO TIME

0°-59°			60°-119°			120°-179°			180°-239°			240°-299°			300°-359°				0' 00	0' 25	0' 50	0' 75
°	'	"	°	'	"	°	'	"	°	'	"	°	'	"	°	'	"		m	s	m	s
0	0	00	60	4	00	120	8	00	180	12	00	240	16	00	300	20	00	0	0	00	0	01
1	0	04	61	4	04	121	8	04	181	12	04	241	16	04	301	20	04	1	0	04	0	05
2	0	08	62	4	08	122	8	08	182	12	08	242	16	08	302	20	08	2	0	08	0	09
3	0	12	63	4	12	123	8	12	183	12	12	243	16	12	303	20	12	3	0	12	0	13
4	0	16	64	4	16	124	8	16	184	12	16	244	16	16	304	20	16	4	0	16	0	17
5	0	20	65	4	20	125	8	20	185	12	20	245	16	20	305	20	20	5	0	20	0	21
6	0	24	66	4	24	126	8	24	186	12	24	246	16	24	306	20	24	6	0	24	0	25
7	0	28	67	4	28	127	8	28	187	12	28	247	16	28	307	20	28	7	0	28	0	29
8	0	32	68	4	32	128	8	32	188	12	32	248	16	32	308	20	32	8	0	32	0	33
9	0	36	69	4	36	129	8	36	189	12	36	249	16	36	309	20	36	9	0	36	0	37
10	0	40	70	4	40	130	8	40	190	12	40	250	16	40	310	20	40	10	0	40	0	41
11	0	44	71	4	44	131	8	44	191	12	44	251	16	44	311	20	44	11	0	44	0	45
12	0	48	72	4	48	132	8	48	192	12	48	252	16	48	312	20	48	12	0	48	0	49
13	0	52	73	4	52	133	8	52	193	12	52	253	16	52	313	20	52	13	0	52	0	53
14	0	56	74	4	56	134	8	56	194	12	56	254	16	56	314	20	56	14	0	56	0	57
15	1	00	75	5	00	135	9	00	195	13	00	255	17	00	315	21	00	15	1	00	1	01
16	1	04	76	5	04	136	9	04	196	13	04	256	17	04	316	21	04	16	1	04	1	05
17	1	08	77	5	08	137	9	08	197	13	08	257	17	08	317	21	08	17	1	08	1	09
18	1	12	78	5	12	138	9	12	198	13	12	258	17	12	318	21	12	18	1	12	1	13
19	1	16	79	5	16	139	9	16	199	13	16	259	17	16	319	21	16	19	1	16	1	17
20	1	20	80	5	20	140	9	20	200	13	20	260	17	20	320	21	20	20	1	20	1	21
21	1	24	81	5	24	141	9	24	201	13	24	261	17	24	321	21	24	21	1	24	1	25
22	1	28	82	5	28	142	9	28	202	13	28	262	17	28	322	21	28	22	1	28	1	29
23	1	32	83	5	32	143	9	32	203	13	32	263	17	32	323	21	32	23	1	32	1	33
24	1	36	84	5	36	144	9	36	204	13	36	264	17	36	324	21	36	24	1	36	1	37
25	1	40	85	5	40	145	9	40	205	13	40	265	17	40	325	21	40	25	1	40	1	41
26	1	44	86	5	44	146	9	44	206	13	44	266	17	44	326	21	44	26	1	44	1	45
27	1	48	87	5	48	147	9	48	207	13	48	267	17	48	327	21	48	27	1	48	1	49
28	1	52	88	5	52	148	9	52	208	13	52	268	17	52	328	21	52	28	1	52	1	53
29	1	56	89	5	56	149	9	56	209	13	56	269	17	56	329	21	56	29	1	56	1	57
30	2	00	90	6	00	150	10	00	210	14	00	270	18	00	330	22	00	30	2	00	2	01
31	2	04	91	6	04	151	10	04	211	14	04	271	18	04	331	22	04	31	2	04	2	05
32	2	08	92	6	08	152	10	08	212	14	08	272	18	08	332	22	08	32	2	08	2	09
33	2	12	93	6	12	153	10	12	213	14	12	273	18	12	333	22	12	33	2	12	2	13
34	2	16	94	6	16	154	10	16	214	14	16	274	18	16	334	22	16	34	2	16	2	17
35	2	20	95	6	20	155	10	20	215	14	20	275	18	20	335	22	20	35	2	20	2	21
36	2	24	96	6	24	156	10	24	216	14	24	276	18	24	336	22	24	36	2	24	2	25
37	2	28	97	6	28	157	10	28	217	14	28	277	18	28	337	22	28	37	2	28	2	29
38	2	32	98	6	32	158	10	32	218	14	32	278	18	32	338	22	32	38	2	32	2	33
39	2	36	99	6	36	159	10	36	219	14	36	279	18	36	339	22	36	39	2	36	2	37
40	2	40	100	6	40	160	10	40	220	14	40	280	18	40	340	22	40	40	2	40	2	41
41	2	44	101	6	44	161	10	44	221	14	44	281	18	44	341	22	44	41	2	44	2	45
42	2	48	102	6	48	162	10	48	222	14	48	282	18	48	342	22	48	42	2	48	2	49
43	2	52	103	6	52	163	10	52	223	14	52	283	18	52	343	22	52	43	2	52	2	53
44	2	56	104	6	56	164	10	56	224	14	56	284	18	56	344	22	56	44	2	56	2	57
45	3	00	105	7	00	165	11	00	225	15	00	285	19	00	345	23	00	45	3	00	3	01
46	3	04	106	7	04	166	11	04	226	15	04	286	19	04	346	23	04	46	3	04	3	05
47	3	08	107	7	08	167	11	08	227	15	08	287	19	08	347	23	08	47	3	08	3	09
48	3	12	108	7	12	168	11	12	228	15	12	288	19	12	348	23	12	48	3	12	3	13
49	3	16	109	7	16	169	11	16	229	15	16	289	19	16	349	23	16	49	3	16	3	17
50	3	20	110	7	20	170	11	20	230	15	20	290	19	20	350	23	20	50	3	20	3	21
51	3	24	111	7	24	171	11	24	231	15	24	291	19	24	351	23	24	51	3	24	3	25
52	3	28	112	7	28	172	11	28	232	15	28	292	19	28	352	23	28	52	3	28	3	29
53	3	32	113	7	32	173	11	32	233	15	32	293	19	32	353	23	32	53	3	32	3	33
54	3	36	114	7	36	174	11	36	234	15	36	294	19	36	354	23	36	54	3	36	3	37
55	3	40	115	7	40	175	11	40	235	15	40	295	19	40	355	23	40	55	3	40	3	41
56	3	44	116	7	44	176	11	44	236	15	44	296	19	44	356	23	44	56	3	44	3	45
57	3	48	117	7	48	177	11	48	237	15	48	297	19	48	357	23	48	57	3	48	3	49
58	3	52	118	7	52	178	11	52	238	15	52	298	19	52	358	23	52	58	3	52	3	53
59	3	56	119	7	56	179	11	56	239	15	56	299	19	56	359	23	56	59	3	56	3	57

The above table is for converting expressions in arc to their equivalent in time ; its main use in this Almanac is for the conversion of longitude for application to L.M.T. (*added if west, subtracted if east*) to give G.M.T. or vice versa, particularly in the case of sunrise, sunset, etc.

0	SUN PLANETS	ARIES	MOON	$\frac{v}{d}$ or Corr ⁿ	$\frac{v}{d}$ or Corr ⁿ	$\frac{v}{d}$ or Corr ⁿ
00	0 00.0	0 00.0	0 00.0	0.0 0.0	6.0 0.1	12.0 0.1
01	0 00.3	0 00.3	0 00.2	0.1 0.0	6.1 0.1	12.1 0.1
02	0 00.5	0 00.5	0 00.5	0.2 0.0	6.2 0.1	12.2 0.1
03	0 00.8	0 00.8	0 00.7	0.3 0.0	6.3 0.1	12.3 0.1
04	0 01.0	0 01.0	0 01.0	0.4 0.0	6.4 0.1	12.4 0.1
05	0 01.3	0 01.3	0 01.2	0.5 0.0	6.5 0.1	12.5 0.1
06	0 01.5	0 01.5	0 01.4	0.6 0.0	6.6 0.1	12.6 0.1
07	0 01.8	0 01.8	0 01.7	0.7 0.0	6.7 0.1	12.7 0.1
08	0 02.0	0 02.0	0 01.9	0.8 0.0	6.8 0.1	12.8 0.1
09	0 02.3	0 02.3	0 02.1	0.9 0.0	6.9 0.1	12.9 0.1
10	0 02.5	0 02.5	0 02.4	1.0 0.0	7.0 0.1	13.0 0.1
11	0 02.8	0 02.8	0 02.6	1.1 0.0	7.1 0.1	13.1 0.1
12	0 03.0	0 03.0	0 02.9	1.2 0.0	7.2 0.1	13.2 0.1
13	0 03.3	0 03.3	0 03.1	1.3 0.0	7.3 0.1	13.3 0.1
14	0 03.5	0 03.5	0 03.3	1.4 0.0	7.4 0.1	13.4 0.1
15	0 03.8	0 03.8	0 03.6	1.5 0.0	7.5 0.1	13.5 0.1
16	0 04.0	0 04.0	0 03.8	1.6 0.0	7.6 0.1	13.6 0.1
17	0 04.3	0 04.3	0 04.1	1.7 0.0	7.7 0.1	13.7 0.1
18	0 04.5	0 04.5	0 04.3	1.8 0.0	7.8 0.1	13.8 0.1
19	0 04.8	0 04.8	0 04.5	1.9 0.0	7.9 0.1	13.9 0.1
20	0 05.0	0 05.0	0 04.8	2.0 0.0	8.0 0.1	14.0 0.1
21	0 05.3	0 05.3	0 05.0	2.1 0.0	8.1 0.1	14.1 0.1
22	0 05.5	0 05.5	0 05.2	2.2 0.0	8.2 0.1	14.2 0.1
23	0 05.8	0 05.8	0 05.5	2.3 0.0	8.3 0.1	14.3 0.1
24	0 06.0	0 06.0	0 05.7	2.4 0.0	8.4 0.1	14.4 0.1
25	0 06.3	0 06.3	0 06.0	2.5 0.0	8.5 0.1	14.5 0.1
26	0 06.5	0 06.5	0 06.2	2.6 0.0	8.6 0.1	14.6 0.1
27	0 06.8	0 06.8	0 06.4	2.7 0.0	8.7 0.1	14.7 0.1
28	0 07.0	0 07.0	0 06.7	2.8 0.0	8.8 0.1	14.8 0.1
29	0 07.3	0 07.3	0 06.9	2.9 0.0	8.9 0.1	14.9 0.1
30	0 07.5	0 07.5	0 07.2	3.0 0.0	9.0 0.1	15.0 0.1
31	0 07.8	0 07.8	0 07.4	3.1 0.0	9.1 0.1	15.1 0.1
32	0 08.0	0 08.0	0 07.6	3.2 0.0	9.2 0.1	15.2 0.1
33	0 08.3	0 08.3	0 07.9	3.3 0.0	9.3 0.1	15.3 0.1
34	0 08.5	0 08.5	0 08.1	3.4 0.0	9.4 0.1	15.4 0.1
35	0 08.8	0 08.8	0 08.4	3.5 0.0	9.5 0.1	15.5 0.1
36	0 09.0	0 09.0	0 08.6	3.6 0.0	9.6 0.1	15.6 0.1
37	0 09.3	0 09.3	0 08.8	3.7 0.0	9.7 0.1	15.7 0.1
38	0 09.5	0 09.5	0 09.1	3.8 0.0	9.8 0.1	15.8 0.1
39	0 09.8	0 09.8	0 09.3	3.9 0.0	9.9 0.1	15.9 0.1
40	0 10.0	0 10.0	0 09.5	4.0 0.0	10.0 0.1	16.0 0.1
41	0 10.3	0 10.3	0 09.8	4.1 0.0	10.1 0.1	16.1 0.1
42	0 10.5	0 10.5	0 10.0	4.2 0.0	10.2 0.1	16.2 0.1
43	0 10.8	0 10.8	0 10.3	4.3 0.0	10.3 0.1	16.3 0.1
44	0 11.0	0 11.0	0 10.5	4.4 0.0	10.4 0.1	16.4 0.1
45	0 11.3	0 11.3	0 10.7	4.5 0.0	10.5 0.1	16.5 0.1
46	0 11.5	0 11.5	0 11.0	4.6 0.0	10.6 0.1	16.6 0.1
47	0 11.8	0 11.8	0 11.2	4.7 0.0	10.7 0.1	16.7 0.1
48	0 12.0	0 12.0	0 11.5	4.8 0.0	10.8 0.1	16.8 0.1
49	0 12.3	0 12.3	0 11.7	4.9 0.0	10.9 0.1	16.9 0.1
50	0 12.5	0 12.5	0 11.9	5.0 0.0	11.0 0.1	17.0 0.1
51	0 12.8	0 12.8	0 12.2	5.1 0.0	11.1 0.1	17.1 0.1
52	0 13.0	0 13.0	0 12.4	5.2 0.0	11.2 0.1	17.2 0.1
53	0 13.3	0 13.3	0 12.6	5.3 0.0	11.3 0.1	17.3 0.1
54	0 13.5	0 13.5	0 12.9	5.4 0.0	11.4 0.1	17.4 0.1
55	0 13.8	0 13.8	0 13.1	5.5 0.0	11.5 0.1	17.5 0.1
56	0 14.0	0 14.0	0 13.4	5.6 0.0	11.6 0.1	17.6 0.1
57	0 14.3	0 14.3	0 13.6	5.7 0.0	11.7 0.1	17.7 0.1
58	0 14.5	0 14.5	0 13.8	5.8 0.0	11.8 0.1	17.8 0.1
59	0 14.8	0 14.8	0 14.1	5.9 0.0	11.9 0.1	17.9 0.1
60	0 15.0	0 15.0	0 14.3	6.0 0.1	12.0 0.1	18.0 0.2

1	SUN PLANETS	ARIES	MOON	$\frac{v}{d}$ or Corr ⁿ	$\frac{v}{d}$ or Corr ⁿ	$\frac{v}{d}$ or Corr ⁿ
00	0 15.0	0 15.0	0 14.3	0.0 0.0	6.0 0.2	12.0 0.3
01	0 15.3	0 15.3	0 14.6	0.1 0.0	6.1 0.2	12.1 0.3
02	0 15.5	0 15.5	0 14.8	0.2 0.0	6.2 0.2	12.2 0.3
03	0 15.8	0 15.8	0 15.0	0.3 0.0	6.3 0.2	12.3 0.3
04	0 16.0	0 16.0	0 15.3	0.4 0.0	6.4 0.2	12.4 0.3
05	0 16.3	0 16.3	0 15.5	0.5 0.0	6.5 0.2	12.5 0.3
06	0 16.5	0 16.5	0 15.7	0.6 0.0	6.6 0.2	12.6 0.3
07	0 16.8	0 16.8	0 16.0	0.7 0.0	6.7 0.2	12.7 0.3
08	0 17.0	0 17.0	0 16.2	0.8 0.0	6.8 0.2	12.8 0.3
09	0 17.3	0 17.3	0 16.5	0.9 0.0	6.9 0.2	12.9 0.3
10	0 17.5	0 17.5	0 16.7	1.0 0.0	7.0 0.2	13.0 0.3
11	0 17.8	0 17.8	0 16.9	1.1 0.0	7.1 0.2	13.1 0.3
12	0 18.0	0 18.0	0 17.2	1.2 0.0	7.2 0.2	13.2 0.3
13	0 18.3	0 18.3	0 17.4	1.3 0.0	7.3 0.2	13.3 0.3
14	0 18.5	0 18.6	0 17.7	1.4 0.0	7.4 0.2	13.4 0.3
15	0 18.8	0 18.8	0 17.9	1.5 0.0	7.5 0.2	13.5 0.3
16	0 19.0	0 19.1	0 18.1	1.6 0.0	7.6 0.2	13.6 0.3
17	0 19.3	0 19.3	0 18.4	1.7 0.0	7.7 0.2	13.7 0.3
18	0 19.5	0 19.6	0 18.6	1.8 0.0	7.8 0.2	13.8 0.3
19	0 19.8	0 19.8	0 18.9	1.9 0.0	7.9 0.2	13.9 0.3
20	0 20.0	0 20.1	0 19.1	2.0 0.1	8.0 0.2	14.0 0.4
21	0 20.3	0 20.3	0 19.3	2.1 0.1	8.1 0.2	14.1 0.4
22	0 20.5	0 20.6	0 19.6	2.2 0.1	8.2 0.2	14.2 0.4
23	0 20.8	0 20.8	0 19.8	2.3 0.1	8.3 0.2	14.3 0.4
24	0 21.0	0 21.1	0 20.0	2.4 0.1	8.4 0.2	14.4 0.4
25	0 21.3	0 21.3	0 20.3	2.5 0.1	8.5 0.2	14.5 0.4
26	0 21.5	0 21.6	0 20.5	2.6 0.1	8.6 0.2	14.6 0.4
27	0 21.8	0 21.8	0 20.8	2.7 0.1	8.7 0.2	14.7 0.4
28	0 22.0	0 22.1	0 21.0	2.8 0.1	8.8 0.2	14.8 0.4
29	0 22.3	0 22.3	0 21.2	2.9 0.1	8.9 0.2	14.9 0.4
30	0 22.5	0 22.6	0 21.5	3.0 0.1	9.0 0.2	15.0 0.4
31	0 22.8	0 22.8	0 21.7	3.1 0.1	9.1 0.2	15.1 0.4
32	0 23.0	0 23.1	0 22.0	3.2 0.1	9.2 0.2	15.2 0.4
33	0 23.3	0 23.3	0 22.2	3.3 0.1	9.3 0.2	15.3 0.4
34	0 23.5	0 23.6	0 22.4	3.4 0.1	9.4 0.2	15.4 0.4
35	0 23.8	0 23.8	0 22.7	3.5 0.1	9.5 0.2	15.5 0.4
36	0 24.0	0 24.1	0 22.9	3.6 0.1	9.6 0.2	15.6 0.4
37	0 24.3	0 24.3	0 23.1	3.7 0.1	9.7 0.2	15.7 0.4
38	0 24.5	0 24.6	0 23.4	3.8 0.1	9.8 0.2	15.8 0.4
39	0 24.8	0 24.8	0 23.6	3.9 0.1	9.9 0.2	15.9 0.4
40	0 25.0	0 25.1	0 23.9	4.0 0.1	10.0 0.3	16.0 0.4
41	0 25.3	0 25.3	0 24.1	4.1 0.1	10.1 0.3	16.1 0.4
42	0 25.5	0 25.6	0 24.3	4.2 0.1	10.2 0.3	16.2 0.4
43	0 25.8	0 25.8	0 24.6	4.3 0.1	10.3 0.3	16.3 0.4
44	0 26.0	0 26.1	0 24.8	4.4 0.1	10.4 0.3	16.4 0.4
45	0 26.3	0 26.3	0 25.1	4.5 0.1	10.5 0.3	16.5 0.4
46	0 26.5	0 26.6	0 25.3	4.6 0.1	10.6 0.3	16.6 0.4
47	0 26.8	0 26.8	0 25.5	4.7 0.1	10.7 0.3	16.7 0.4
48	0 27.0	0 27.1	0 25.8	4.8 0.1	10.8 0.3	16.8 0.4
49	0 27.3	0 27.3	0 26.0	4.9 0.1	10.9 0.3	16.9 0.4
50	0 27.5	0 27.6	0 26.2	5.0 0.1	11.0 0.3	17.0 0.4
51	0 27.8	0 27.8	0 26.5	5.1 0.1	11.1 0.3	17.1 0.4
52	0 28.0	0 28.1	0 26.7	5.2 0.1	11.2 0.3	17.2 0.4
53	0 28.3	0 28.3	0 27.0	5.3 0.1	11.3 0.3	17.3 0.4
54	0 28.5	0 28.6	0 27.2	5.4 0.1	11.4 0.3	17.4 0.4
55	0 28.8	0 28.8	0 27.4	5.5 0.1	11.5 0.3	17.5 0.4
56	0 29.0	0 29.1	0 27.7	5.6 0.1	11.6 0.3	17.6 0.4
57	0 29.3	0 29.3	0 27.9	5.7 0.1	11.7 0.3	17.7 0.4
58	0 29.5	0 29.6	0 28.2	5.8 0.1	11.8 0.3	17.8 0.4
59	0 29.8	0 29.8	0 28.4	5.9 0.1	11.9 0.3	17.9 0.4
60	0 30.0	0 30.1	0 28.6	6.0 0.2	12.0 0.3	18.0 0.5

^m 2	SUN PLANETS	ARIES	MOON	ν or d	Corr ⁿ	ν or d	Corr ⁿ	ν or d	Corr ⁿ	^m 3	SUN PLANETS	ARIES	MOON	ν or d	Corr ⁿ	ν or d	Corr ⁿ	ν or d	Corr ⁿ
s	o	o	o							s	o	o	o						
00	0 30.0	0 30.1	0 28.6	0.0	0.0	6.0	0.3	12.0	0.5	00	0 45.0	0 45.1	0 43.0	0.0	0.0	6.0	0.4	12.0	0.7
01	0 30.3	0 30.3	0 28.9	0.1	0.0	6.1	0.3	12.1	0.5	01	0 45.3	0 45.4	0 43.2	0.1	0.0	6.1	0.4	12.1	0.7
02	0 30.5	0 30.6	0 29.1	0.2	0.0	6.2	0.3	12.2	0.5	02	0 45.5	0 45.6	0 43.4	0.2	0.0	6.2	0.4	12.2	0.7
03	0 30.8	0 30.8	0 29.3	0.3	0.0	6.3	0.3	12.3	0.5	03	0 45.8	0 45.9	0 43.7	0.3	0.0	6.3	0.4	12.3	0.7
04	0 31.0	0 31.1	0 29.6	0.4	0.0	6.4	0.3	12.4	0.5	04	0 46.0	0 46.1	0 43.9	0.4	0.0	6.4	0.4	12.4	0.7
05	0 31.3	0 31.3	0 29.8	0.5	0.0	6.5	0.3	12.5	0.5	05	0 46.3	0 46.4	0 44.1	0.5	0.0	6.5	0.4	12.5	0.7
06	0 31.5	0 31.6	0 30.1	0.6	0.0	6.6	0.3	12.6	0.5	06	0 46.5	0 46.6	0 44.4	0.6	0.0	6.6	0.4	12.6	0.7
07	0 31.8	0 31.8	0 30.3	0.7	0.0	6.7	0.3	12.7	0.5	07	0 46.8	0 46.9	0 44.6	0.7	0.0	6.7	0.4	12.7	0.7
08	0 32.0	0 32.1	0 30.5	0.8	0.0	6.8	0.3	12.8	0.5	08	0 47.0	0 47.1	0 44.9	0.8	0.0	6.8	0.4	12.8	0.7
09	0 32.3	0 32.3	0 30.8	0.9	0.0	6.9	0.3	12.9	0.5	09	0 47.3	0 47.4	0 45.1	0.9	0.1	6.9	0.4	12.9	0.8
10	0 32.5	0 32.6	0 31.0	1.0	0.0	7.0	0.3	13.0	0.5	10	0 47.5	0 47.6	0 45.3	1.0	0.1	7.0	0.4	13.0	0.8
11	0 32.8	0 32.8	0 31.3	1.1	0.0	7.1	0.3	13.1	0.5	11	0 47.8	0 47.9	0 45.6	1.1	0.1	7.1	0.4	13.1	0.8
12	0 33.0	0 33.1	0 31.5	1.2	0.1	7.2	0.3	13.2	0.6	12	0 48.0	0 48.1	0 45.8	1.2	0.1	7.2	0.4	13.2	0.8
13	0 33.3	0 33.3	0 31.7	1.3	0.1	7.3	0.3	13.3	0.6	13	0 48.3	0 48.4	0 46.1	1.3	0.1	7.3	0.4	13.3	0.8
14	0 33.5	0 33.6	0 32.0	1.4	0.1	7.4	0.3	13.4	0.6	14	0 48.5	0 48.6	0 46.3	1.4	0.1	7.4	0.4	13.4	0.8
15	0 33.8	0 33.8	0 32.2	1.5	0.1	7.5	0.3	13.5	0.6	15	0 48.8	0 48.9	0 46.5	1.5	0.1	7.5	0.4	13.5	0.8
16	0 34.0	0 34.1	0 32.5	1.6	0.1	7.6	0.3	13.6	0.6	16	0 49.0	0 49.1	0 46.8	1.6	0.1	7.6	0.4	13.6	0.8
17	0 34.3	0 34.3	0 32.7	1.7	0.1	7.7	0.3	13.7	0.6	17	0 49.3	0 49.4	0 47.0	1.7	0.1	7.7	0.4	13.7	0.8
18	0 34.5	0 34.6	0 32.9	1.8	0.1	7.8	0.3	13.8	0.6	18	0 49.5	0 49.6	0 47.2	1.8	0.1	7.8	0.5	13.8	0.8
19	0 34.8	0 34.8	0 33.2	1.9	0.1	7.9	0.3	13.9	0.6	19	0 49.8	0 49.9	0 47.5	1.9	0.1	7.9	0.5	13.9	0.8
20	0 35.0	0 35.1	0 33.4	2.0	0.1	8.0	0.3	14.0	0.6	20	0 50.0	0 50.1	0 47.7	2.0	0.1	8.0	0.5	14.0	0.8
21	0 35.3	0 35.3	0 33.6	2.1	0.1	8.1	0.3	14.1	0.6	21	0 50.3	0 50.4	0 48.0	2.1	0.1	8.1	0.5	14.1	0.8
22	0 35.5	0 35.6	0 33.9	2.2	0.1	8.2	0.3	14.2	0.6	22	0 50.5	0 50.6	0 48.2	2.2	0.1	8.2	0.5	14.2	0.8
23	0 35.8	0 35.8	0 34.1	2.3	0.1	8.3	0.3	14.3	0.6	23	0 50.8	0 50.9	0 48.4	2.3	0.1	8.3	0.5	14.3	0.8
24	0 36.0	0 36.1	0 34.4	2.4	0.1	8.4	0.4	14.4	0.6	24	0 51.0	0 51.1	0 48.7	2.4	0.1	8.4	0.5	14.4	0.8
25	0 36.3	0 36.3	0 34.6	2.5	0.1	8.5	0.4	14.5	0.6	25	0 51.3	0 51.4	0 48.9	2.5	0.1	8.5	0.5	14.5	0.8
26	0 36.5	0 36.6	0 34.8	2.6	0.1	8.6	0.4	14.6	0.6	26	0 51.5	0 51.6	0 49.2	2.6	0.2	8.6	0.5	14.6	0.9
27	0 36.8	0 36.9	0 35.1	2.7	0.1	8.7	0.4	14.7	0.6	27	0 51.8	0 51.9	0 49.4	2.7	0.2	8.7	0.5	14.7	0.9
28	0 37.0	0 37.1	0 35.3	2.8	0.1	8.8	0.4	14.8	0.6	28	0 52.0	0 52.1	0 49.6	2.8	0.2	8.8	0.5	14.8	0.9
29	0 37.3	0 37.4	0 35.6	2.9	0.1	8.9	0.4	14.9	0.6	29	0 52.3	0 52.4	0 49.9	2.9	0.2	8.9	0.5	14.9	0.9
30	0 37.5	0 37.6	0 35.8	3.0	0.1	9.0	0.4	15.0	0.6	30	0 52.5	0 52.6	0 50.1	3.0	0.2	9.0	0.5	15.0	0.9
31	0 37.8	0 37.9	0 36.0	3.1	0.1	9.1	0.4	15.1	0.6	31	0 52.8	0 52.9	0 50.3	3.1	0.2	9.1	0.5	15.1	0.9
32	0 38.0	0 38.1	0 36.3	3.2	0.1	9.2	0.4	15.2	0.6	32	0 53.0	0 53.1	0 50.6	3.2	0.2	9.2	0.5	15.2	0.9
33	0 38.3	0 38.4	0 36.5	3.3	0.1	9.3	0.4	15.3	0.6	33	0 53.3	0 53.4	0 50.8	3.3	0.2	9.3	0.5	15.3	0.9
34	0 38.5	0 38.6	0 36.7	3.4	0.1	9.4	0.4	15.4	0.6	34	0 53.5	0 53.6	0 51.1	3.4	0.2	9.4	0.5	15.4	0.9
35	0 38.8	0 38.9	0 37.0	3.5	0.1	9.5	0.4	15.5	0.6	35	0 53.8	0 53.9	0 51.3	3.5	0.2	9.5	0.6	15.5	0.9
36	0 39.0	0 39.1	0 37.2	3.6	0.2	9.6	0.4	15.6	0.7	36	0 54.0	0 54.1	0 51.5	3.6	0.2	9.6	0.6	15.6	0.9
37	0 39.3	0 39.4	0 37.5	3.7	0.2	9.7	0.4	15.7	0.7	37	0 54.3	0 54.4	0 51.8	3.7	0.2	9.7	0.6	15.7	0.9
38	0 39.5	0 39.6	0 37.7	3.8	0.2	9.8	0.4	15.8	0.7	38	0 54.5	0 54.6	0 52.0	3.8	0.2	9.8	0.6	15.8	0.9
39	0 39.8	0 39.9	0 37.9	3.9	0.2	9.9	0.4	15.9	0.7	39	0 54.8	0 54.9	0 52.3	3.9	0.2	9.9	0.6	15.9	0.9
40	0 40.0	0 40.1	0 38.2	4.0	0.2	10.0	0.4	16.0	0.7	40	0 55.0	0 55.2	0 52.5	4.0	0.2	10.0	0.6	16.0	0.9
41	0 40.3	0 40.4	0 38.4	4.1	0.2	10.1	0.4	16.1	0.7	41	0 55.3	0 55.4	0 52.7	4.1	0.2	10.1	0.6	16.1	0.9
42	0 40.5	0 40.6	0 38.7	4.2	0.2	10.2	0.4	16.2	0.7	42	0 55.5	0 55.7	0 53.0	4.2	0.2	10.2	0.6	16.2	0.9
43	0 40.8	0 40.9	0 38.9	4.3	0.2	10.3	0.4	16.3	0.7	43	0 55.8	0 55.9	0 53.2	4.3	0.3	10.3	0.6	16.3	1.0
44	0 41.0	0 41.1	0 39.1	4.4	0.2	10.4	0.4	16.4	0.7	44	0 56.0	0 56.2	0 53.4	4.4	0.3	10.4	0.6	16.4	1.0
45	0 41.3	0 41.4	0 39.4	4.5	0.2	10.5	0.4	16.5	0.7	45	0 56.3	0 56.4	0 53.7	4.5	0.3	10.5	0.6	16.5	1.0
46	0 41.5	0 41.6	0 39.6	4.6	0.2	10.6	0.4	16.6	0.7	46	0 56.5	0 56.7	0 53.9	4.6	0.3	10.6	0.6	16.6	1.0
47	0 41.8	0 41.9	0 39.8	4.7	0.2	10.7	0.4	16.7	0.7	47	0 56.8	0 56.9	0 54.2	4.7	0.3	10.7	0.6	16.7	1.0
48	0 42.0	0 42.1	0 40.1	4.8	0.2	10.8	0.5	16.8	0.7	48	0 57.0	0 57.2	0 54.4	4.8	0.3	10.8	0.6	16.8	1.0
49	0 42.3	0 42.4	0 40.3	4.9	0.2	10.9	0.5	16.9	0.7	49	0 57.3	0 57.4	0 54.6	4.9	0.3	10.9	0.6	16.9	1.0
50	0 42.5	0 42.6	0 40.6	5.0	0.2	11.0	0.5	17.0	0.7	50	0 57.5	0 57.7	0 54.9	5.0	0.3	11.0	0.6	17.0	1.0
51	0 42.8	0 42.9	0 40.8	5.1	0.2	11.1	0.5	17.1	0.7	51	0 57.8	0 57.9	0 55.1	5.1	0.3	11.1	0.6	17.1	1.0
52	0 43.0	0 43.1	0 41.0	5.2	0.2	11.2	0.5	17.2	0.7	52	0 58.0	0 58.2	0 55.4	5.2	0.3	11.2	0.7	17.2	1.0
53	0 43.3	0 43.4	0 41.3	5.3	0.2	11.3	0.5	17.3	0.7	53	0 58.3	0 58.4	0 55.6	5.3	0.3	11.3	0.7	17.3	1.0
54	0 43.5	0 43.6	0 41.5	5.4	0.2	11.4	0.5	17.4	0.7	54	0 58.5	0 58.7	0 55.8	5.4	0.3	11.4	0.7	17.4	1.0
55	0 43.8	0 43.9	0 41.8	5.5	0.2	11.5	0.5	17.5	0.7	55	0 58.8	0 58.9	0 56.1	5.5	0.3	11.5	0.7	17.5	1.0
56	0 44.0	0 44.1	0 42.0	5.6	0.2	11.6	0.5	17.6	0.7	56	0 59.0	0 59.2	0 56.3	5.6	0.3	11.6	0.7	17.6	1.0
57	0 44.3	0 44.4	0 42.2	5.7	0.2	11.7	0.5	17.7	0.7	57	0 59.3	0 59.4	0 56.6	5.7	0.3	11.7	0.7	17.7	1.0
58	0 44.5	0 44.6	0 42.5	5.8	0.2	11.8	0.5	17.8	0.7	58	0 59.5	0 59.7	0 56.8	5.8	0.3	11.8	0.7	17.8	1.0
59	0 44.8	0 44.9	0 42.7	5.9	0.2	11.9	0.5	17.9	0.7	59	0 59.8	0 59.9	0 57.0	5.9	0.3	11.9	0.7	17.9	1.0
60	0 45.0	0 45.1	0 43.0	6.0	0.3	12.0	0.5	18.0	0.8	60	1 00.0	1 00.2	0 57.3	6.0	0.4	12.0	0.7	18.0	1.1

4 ^m	SUN PLANETS	ARIES	MOON	v or d	Corr ⁿ	v or d	Corr ⁿ	v or d	Corr ⁿ	5 ^m	SUN PLANETS	ARIES	MOON	v or d	Corr ⁿ	v or d	Corr ⁿ	v or d	Corr ⁿ
00	1 00:0	1 00:2	0 57:3	0:0	0:0	6:0	0:5	12:0	0:9	00	1 15:0	1 15:2	1 11:6	0:0	0:0	6:0	0:6	12:0	1:1
01	1 00:3	1 00:4	0 57:5	0:1	0:0	6:1	0:5	12:1	0:9	01	1 15:3	1 15:5	1 11:8	0:1	0:0	6:1	0:6	12:1	1:1
02	1 00:5	1 00:7	0 57:7	0:2	0:0	6:2	0:5	12:2	0:9	02	1 15:5	1 15:7	1 12:1	0:2	0:0	6:2	0:6	12:2	1:1
03	1 00:8	1 00:9	0 58:0	0:3	0:0	6:3	0:5	12:3	0:9	03	1 15:8	1 16:0	1 12:3	0:3	0:0	6:3	0:6	12:3	1:1
04	1 01:0	1 01:2	0 58:2	0:4	0:0	6:4	0:5	12:4	0:9	04	1 16:0	1 16:2	1 12:5	0:4	0:0	6:4	0:6	12:4	1:1
05	1 01:3	1 01:4	0 58:5	0:5	0:0	6:5	0:5	12:5	0:9	05	1 16:3	1 16:5	1 12:8	0:5	0:0	6:5	0:6	12:5	1:1
06	1 01:5	1 01:7	0 58:7	0:6	0:0	6:6	0:5	12:6	0:9	06	1 16:5	1 16:7	1 13:0	0:6	0:1	6:6	0:6	12:6	1:2
07	1 01:8	1 01:9	0 58:9	0:7	0:1	6:7	0:5	12:7	1:0	07	1 16:8	1 17:0	1 13:3	0:7	0:1	6:7	0:6	12:7	1:2
08	1 02:0	1 02:2	0 59:2	0:8	0:1	6:8	0:5	12:8	1:0	08	1 17:0	1 17:2	1 13:5	0:8	0:1	6:8	0:6	12:8	1:2
09	1 02:3	1 02:4	0 59:4	0:9	0:1	6:9	0:5	12:9	1:0	09	1 17:3	1 17:5	1 13:7	0:9	0:1	6:9	0:6	12:9	1:2
10	1 02:5	1 02:7	0 59:7	1:0	0:1	7:0	0:5	13:0	1:0	10	1 17:5	1 17:7	1 14:0	1:0	0:1	7:0	0:6	13:0	1:2
11	1 02:8	1 02:9	0 59:9	1:1	0:1	7:1	0:5	13:1	1:0	11	1 17:8	1 18:0	1 14:2	1:1	0:1	7:1	0:7	13:1	1:2
12	1 03:0	1 03:2	1 00:1	1:2	0:1	7:2	0:5	13:2	1:0	12	1 18:0	1 18:2	1 14:4	1:2	0:1	7:2	0:7	13:2	1:2
13	1 03:3	1 03:4	1 00:4	1:3	0:1	7:3	0:5	13:3	1:0	13	1 18:3	1 18:5	1 14:7	1:3	0:1	7:3	0:7	13:3	1:2
14	1 03:5	1 03:7	1 00:6	1:4	0:1	7:4	0:6	13:4	1:0	14	1 18:5	1 18:7	1 14:9	1:4	0:1	7:4	0:7	13:4	1:2
15	1 03:8	1 03:9	1 00:8	1:5	0:1	7:5	0:6	13:5	1:0	15	1 18:8	1 19:0	1 15:2	1:5	0:1	7:5	0:7	13:5	1:2
16	1 04:0	1 04:2	1 01:1	1:6	0:1	7:6	0:6	13:6	1:0	16	1 19:0	1 19:2	1 15:4	1:6	0:1	7:6	0:7	13:6	1:2
17	1 04:3	1 04:4	1 01:3	1:7	0:1	7:7	0:6	13:7	1:0	17	1 19:3	1 19:5	1 15:6	1:7	0:2	7:7	0:7	13:7	1:3
18	1 04:5	1 04:7	1 01:6	1:8	0:1	7:8	0:6	13:8	1:0	18	1 19:5	1 19:7	1 15:9	1:8	0:2	7:8	0:7	13:8	1:3
19	1 04:8	1 04:9	1 01:8	1:9	0:1	7:9	0:6	13:9	1:0	19	1 19:8	1 20:0	1 16:1	1:9	0:2	7:9	0:7	13:9	1:3
20	1 05:0	1 05:2	1 02:0	2:0	0:2	8:0	0:6	14:0	1:1	20	1 20:0	1 20:2	1 16:4	2:0	0:2	8:0	0:7	14:0	1:3
21	1 05:3	1 05:4	1 02:3	2:1	0:2	8:1	0:6	14:1	1:1	21	1 20:3	1 20:5	1 16:6	2:1	0:2	8:1	0:7	14:1	1:3
22	1 05:5	1 05:7	1 02:5	2:2	0:2	8:2	0:6	14:2	1:1	22	1 20:5	1 20:7	1 16:8	2:2	0:2	8:2	0:8	14:2	1:3
23	1 05:8	1 05:9	1 02:8	2:3	0:2	8:3	0:6	14:3	1:1	23	1 20:8	1 21:0	1 17:1	2:3	0:2	8:3	0:8	14:3	1:3
24	1 06:0	1 06:2	1 03:0	2:4	0:2	8:4	0:6	14:4	1:1	24	1 21:0	1 21:2	1 17:3	2:4	0:2	8:4	0:8	14:4	1:3
25	1 06:3	1 06:4	1 03:2	2:5	0:2	8:5	0:6	14:5	1:1	25	1 21:3	1 21:5	1 17:5	2:5	0:2	8:5	0:8	14:5	1:3
26	1 06:5	1 06:7	1 03:5	2:6	0:2	8:6	0:6	14:6	1:1	26	1 21:5	1 21:7	1 17:8	2:6	0:2	8:6	0:8	14:6	1:3
27	1 06:8	1 06:9	1 03:7	2:7	0:2	8:7	0:7	14:7	1:1	27	1 21:8	1 22:0	1 18:0	2:7	0:2	8:7	0:8	14:7	1:3
28	1 07:0	1 07:2	1 03:9	2:8	0:2	8:8	0:7	14:8	1:1	28	1 22:0	1 22:2	1 18:3	2:8	0:3	8:8	0:8	14:8	1:4
29	1 07:3	1 07:4	1 04:2	2:9	0:2	8:9	0:7	14:9	1:1	29	1 22:3	1 22:5	1 18:5	2:9	0:3	8:9	0:8	14:9	1:4
30	1 07:5	1 07:7	1 04:4	3:0	0:2	9:0	0:7	15:0	1:1	30	1 22:5	1 22:7	1 18:7	3:0	0:3	9:0	0:8	15:0	1:4
31	1 07:8	1 07:9	1 04:7	3:1	0:2	9:1	0:7	15:1	1:1	31	1 22:8	1 23:0	1 19:0	3:1	0:3	9:1	0:8	15:1	1:4
32	1 08:0	1 08:2	1 04:9	3:2	0:2	9:2	0:7	15:2	1:1	32	1 23:0	1 23:2	1 19:2	3:2	0:3	9:2	0:8	15:2	1:4
33	1 08:3	1 08:4	1 05:1	3:3	0:2	9:3	0:7	15:3	1:1	33	1 23:3	1 23:5	1 19:5	3:3	0:3	9:3	0:9	15:3	1:4
34	1 08:5	1 08:7	1 05:4	3:4	0:3	9:4	0:7	15:4	1:2	34	1 23:5	1 23:7	1 19:7	3:4	0:3	9:4	0:9	15:4	1:4
35	1 08:8	1 08:9	1 05:6	3:5	0:3	9:5	0:7	15:5	1:2	35	1 23:8	1 24:0	1 19:9	3:5	0:3	9:5	0:9	15:5	1:4
36	1 09:0	1 09:2	1 05:9	3:6	0:3	9:6	0:7	15:6	1:2	36	1 24:0	1 24:2	1 20:2	3:6	0:3	9:6	0:9	15:6	1:4
37	1 09:3	1 09:4	1 06:1	3:7	0:3	9:7	0:7	15:7	1:2	37	1 24:3	1 24:5	1 20:4	3:7	0:3	9:7	0:9	15:7	1:4
38	1 09:5	1 09:7	1 06:3	3:8	0:3	9:8	0:7	15:8	1:2	38	1 24:5	1 24:7	1 20:7	3:8	0:3	9:8	0:9	15:8	1:4
39	1 09:8	1 09:9	1 06:6	3:9	0:3	9:9	0:7	15:9	1:2	39	1 24:8	1 25:0	1 20:9	3:9	0:4	9:9	0:9	15:9	1:5
40	1 10:0	1 10:2	1 06:8	4:0	0:3	10:0	0:8	16:0	1:2	40	1 25:0	1 25:2	1 21:1	4:0	0:4	10:0	0:9	16:0	1:5
41	1 10:3	1 10:4	1 07:0	4:1	0:3	10:1	0:8	16:1	1:2	41	1 25:3	1 25:5	1 21:4	4:1	0:4	10:1	0:9	16:1	1:5
42	1 10:5	1 10:7	1 07:3	4:2	0:3	10:2	0:8	16:2	1:2	42	1 25:5	1 25:7	1 21:6	4:2	0:4	10:2	0:9	16:2	1:5
43	1 10:8	1 10:9	1 07:5	4:3	0:3	10:3	0:8	16:3	1:2	43	1 25:8	1 26:0	1 21:8	4:3	0:4	10:3	0:9	16:3	1:5
44	1 11:0	1 11:2	1 07:8	4:4	0:3	10:4	0:8	16:4	1:2	44	1 26:0	1 26:2	1 22:1	4:4	0:4	10:4	1:0	16:4	1:5
45	1 11:3	1 11:4	1 08:0	4:5	0:3	10:5	0:8	16:5	1:2	45	1 26:3	1 26:5	1 22:3	4:5	0:4	10:5	1:0	16:5	1:5
46	1 11:5	1 11:7	1 08:2	4:6	0:3	10:6	0:8	16:6	1:2	46	1 26:5	1 26:7	1 22:6	4:6	0:4	10:6	1:0	16:6	1:5
47	1 11:8	1 11:9	1 08:5	4:7	0:4	10:7	0:8	16:7	1:3	47	1 26:8	1 27:0	1 22:8	4:7	0:4	10:7	1:0	16:7	1:5
48	1 12:0	1 12:2	1 08:7	4:8	0:4	10:8	0:8	16:8	1:3	48	1 27:0	1 27:2	1 23:0	4:8	0:4	10:8	1:0	16:8	1:5
49	1 12:3	1 12:4	1 09:0	4:9	0:4	10:9	0:8	16:9	1:3	49	1 27:3	1 27:5	1 23:3	4:9	0:4	10:9	1:0	16:9	1:5
50	1 12:5	1 12:7	1 09:2	5:0	0:4	11:0	0:8	17:0	1:3	50	1 27:5	1 27:7	1 23:5	5:0	0:5	11:0	1:0	17:0	1:6
51	1 12:8	1 12:9	1 09:4	5:1	0:4	11:1	0:8	17:1	1:3	51	1 27:8	1 28:0	1 23:8	5:1	0:5	11:1	1:0	17:1	1:6
52	1 13:0	1 13:2	1 09:7	5:2	0:4	11:2	0:8	17:2	1:3	52	1 28:0	1 28:2	1 24:0	5:2	0:5	11:2	1:0	17:2	1:6
53	1 13:3	1 13:5	1 09:9	5:3	0:4	11:3	0:8	17:3	1:3	53	1 28:3	1 28:5	1 24:2	5:3	0:5	11:3	1:0	17:3	1:6
54	1 13:5	1 13:7	1 10:2	5:4	0:4	11:4	0:9	17:4	1:3	54	1 28:5	1 28:7	1 24:5	5:4	0:5	11:4	1:0	17:4	1:6
55	1 13:8	1 14:0	1 10:4	5:5	0:4	11:5	0:9	17:5	1:3	55	1 28:8	1 29:0	1 24:7	5:5	0:5	11:5	1:1	17:5	1:6
56	1 14:0	1 14:2	1 10:6	5:6	0:4	11:6	0:9	17:6	1:3	56	1 29:0	1 29:2	1 24:9	5:6	0:5	11:6	1:1	17:6	1:6
57	1 14:3	1 14:5	1 10:9	5:7	0:4	11:7	0:9	17:7	1:3	57	1 29:3	1 29:5	1 25:2	5:7	0:5	11:7	1:1	17:7	1:6
58	1 14:5	1 14:7	1 11:1	5:8	0:4	11:8	0:9	17:8	1:3	58	1 29:5	1 29:7	1 25:4	5:8	0:5	11:8	1:1	17:8	1:6
59	1 14:8	1 15:0	1 11:3	5:9	0:4	11:9	0:9	17:9	1:3	59	1 29:8	1 30:0	1 25:7	5:9	0:5	11:9	1:1	17:9	1:6
60	1 15:0	1 15:2	1 11:6	6:0	0:5	12:0	0:9	18:0	1:4	60	1 30:0	1 30:2	1 25:9	6:0	0:6	12:0	1:1	18:0	1:7

^m 6	SUN PLANETS	ARIES	MOON	v or d	Corr ⁿ	v or d	Corr ⁿ	v or d	Corr ⁿ	^m 7	SUN PLANETS	ARIES	MOON	v or d	Corr ⁿ	v or d	Corr ⁿ	v or d	Corr ⁿ
^s	^o / ['] / ["]	^o / ['] / ["]	^o / ['] / ["]							^s	^o / ['] / ["]	^o / ['] / ["]	^o / ['] / ["]						
00	1 30.0	1 30.2	1 25.9	0.0	0.0	6.0	0.7	12.0	1.3	00	1 45.0	1 45.3	1 40.2	0.0	0.0	6.0	0.8	12.0	1.5
01	1 30.3	1 30.5	1 26.1	0.1	0.0	6.1	0.7	12.1	1.3	01	1 45.3	1 45.5	1 40.5	0.1	0.0	6.1	0.8	12.1	1.5
02	1 30.5	1 30.7	1 26.4	0.2	0.0	6.2	0.7	12.2	1.3	02	1 45.5	1 45.8	1 40.7	0.2	0.0	6.2	0.8	12.2	1.5
03	1 30.8	1 31.0	1 26.6	0.3	0.0	6.3	0.7	12.3	1.3	03	1 45.8	1 46.0	1 40.9	0.3	0.0	6.3	0.8	12.3	1.5
04	1 31.0	1 31.2	1 26.9	0.4	0.0	6.4	0.7	12.4	1.3	04	1 46.0	1 46.3	1 41.2	0.4	0.1	6.4	0.8	12.4	1.6
05	1 31.3	1 31.5	1 27.1	0.5	0.1	6.5	0.7	12.5	1.4	05	1 46.3	1 46.5	1 41.4	0.5	0.1	6.5	0.8	12.5	1.6
06	1 31.5	1 31.8	1 27.3	0.6	0.1	6.6	0.7	12.6	1.4	06	1 46.5	1 46.8	1 41.6	0.6	0.1	6.6	0.8	12.6	1.6
07	1 31.8	1 32.0	1 27.6	0.7	0.1	6.7	0.7	12.7	1.4	07	1 46.8	1 47.0	1 41.9	0.7	0.1	6.7	0.8	12.7	1.6
08	1 32.0	1 32.3	1 27.8	0.8	0.1	6.8	0.7	12.8	1.4	08	1 47.0	1 47.3	1 42.1	0.8	0.1	6.8	0.9	12.8	1.6
09	1 32.3	1 32.5	1 28.0	0.9	0.1	6.9	0.7	12.9	1.4	09	1 47.3	1 47.5	1 42.4	0.9	0.1	6.9	0.9	12.9	1.6
10	1 32.5	1 32.8	1 28.3	1.0	0.1	7.0	0.8	13.0	1.4	10	1 47.5	1 47.8	1 42.6	1.0	0.1	7.0	0.9	13.0	1.6
11	1 32.8	1 33.0	1 28.5	1.1	0.1	7.1	0.8	13.1	1.4	11	1 47.8	1 48.0	1 42.8	1.1	0.1	7.1	0.9	13.1	1.6
12	1 33.0	1 33.3	1 28.8	1.2	0.1	7.2	0.8	13.2	1.4	12	1 48.0	1 48.3	1 43.1	1.2	0.2	7.2	0.9	13.2	1.7
13	1 33.3	1 33.5	1 29.0	1.3	0.1	7.3	0.8	13.3	1.4	13	1 48.3	1 48.5	1 43.3	1.3	0.2	7.3	0.9	13.3	1.7
14	1 33.5	1 33.8	1 29.2	1.4	0.2	7.4	0.8	13.4	1.5	14	1 48.5	1 48.8	1 43.6	1.4	0.2	7.4	0.9	13.4	1.7
15	1 33.8	1 34.0	1 29.5	1.5	0.2	7.5	0.8	13.5	1.5	15	1 48.8	1 49.0	1 43.8	1.5	0.2	7.5	0.9	13.5	1.7
16	1 34.0	1 34.3	1 29.7	1.6	0.2	7.6	0.8	13.6	1.5	16	1 49.0	1 49.3	1 44.0	1.6	0.2	7.6	1.0	13.6	1.7
17	1 34.3	1 34.5	1 30.0	1.7	0.2	7.7	0.8	13.7	1.5	17	1 49.3	1 49.5	1 44.3	1.7	0.2	7.7	1.0	13.7	1.7
18	1 34.5	1 34.8	1 30.2	1.8	0.2	7.8	0.8	13.8	1.5	18	1 49.5	1 49.8	1 44.5	1.8	0.2	7.8	1.0	13.8	1.7
19	1 34.8	1 35.0	1 30.4	1.9	0.2	7.9	0.9	13.9	1.5	19	1 49.8	1 50.1	1 44.8	1.9	0.2	7.9	1.0	13.9	1.7
20	1 35.0	1 35.3	1 30.7	2.0	0.2	8.0	0.9	14.0	1.5	20	1 50.0	1 50.3	1 45.0	2.0	0.3	8.0	1.0	14.0	1.8
21	1 35.3	1 35.5	1 30.9	2.1	0.2	8.1	0.9	14.1	1.5	21	1 50.3	1 50.6	1 45.2	2.1	0.3	8.1	1.0	14.1	1.8
22	1 35.5	1 35.8	1 31.1	2.2	0.2	8.2	0.9	14.2	1.5	22	1 50.5	1 50.8	1 45.5	2.2	0.3	8.2	1.0	14.2	1.8
23	1 35.8	1 36.0	1 31.4	2.3	0.2	8.3	0.9	14.3	1.5	23	1 50.8	1 51.1	1 45.7	2.3	0.3	8.3	1.0	14.3	1.8
24	1 36.0	1 36.3	1 31.6	2.4	0.3	8.4	0.9	14.4	1.6	24	1 51.0	1 51.3	1 45.9	2.4	0.3	8.4	1.1	14.4	1.8
25	1 36.3	1 36.5	1 31.9	2.5	0.3	8.5	0.9	14.5	1.6	25	1 51.3	1 51.6	1 46.2	2.5	0.3	8.5	1.1	14.5	1.8
26	1 36.5	1 36.8	1 32.1	2.6	0.3	8.6	0.9	14.6	1.6	26	1 51.5	1 51.8	1 46.4	2.6	0.3	8.6	1.1	14.6	1.8
27	1 36.8	1 37.0	1 32.3	2.7	0.3	8.7	0.9	14.7	1.6	27	1 51.8	1 52.1	1 46.7	2.7	0.3	8.7	1.1	14.7	1.8
28	1 37.0	1 37.3	1 32.6	2.8	0.3	8.8	1.0	14.8	1.6	28	1 52.0	1 52.3	1 46.9	2.8	0.4	8.8	1.1	14.8	1.9
29	1 37.3	1 37.5	1 32.8	2.9	0.3	8.9	1.0	14.9	1.6	29	1 52.3	1 52.6	1 47.1	2.9	0.4	8.9	1.1	14.9	1.9
30	1 37.5	1 37.8	1 33.1	3.0	0.3	9.0	1.0	15.0	1.6	30	1 52.5	1 52.8	1 47.4	3.0	0.4	9.0	1.1	15.0	1.9
31	1 37.8	1 38.0	1 33.3	3.1	0.3	9.1	1.0	15.1	1.6	31	1 52.8	1 53.1	1 47.6	3.1	0.4	9.1	1.1	15.1	1.9
32	1 38.0	1 38.3	1 33.5	3.2	0.3	9.2	1.0	15.2	1.6	32	1 53.0	1 53.3	1 47.9	3.2	0.4	9.2	1.2	15.2	1.9
33	1 38.3	1 38.5	1 33.8	3.3	0.4	9.3	1.0	15.3	1.7	33	1 53.3	1 53.6	1 48.1	3.3	0.4	9.3	1.2	15.3	1.9
34	1 38.5	1 38.8	1 34.0	3.4	0.4	9.4	1.0	15.4	1.7	34	1 53.5	1 53.8	1 48.3	3.4	0.4	9.4	1.2	15.4	1.9
35	1 38.8	1 39.0	1 34.3	3.5	0.4	9.5	1.0	15.5	1.7	35	1 53.8	1 54.1	1 48.6	3.5	0.4	9.5	1.2	15.5	1.9
36	1 39.0	1 39.3	1 34.5	3.6	0.4	9.6	1.0	15.6	1.7	36	1 54.0	1 54.3	1 48.8	3.6	0.5	9.6	1.2	15.6	2.0
37	1 39.3	1 39.5	1 34.7	3.7	0.4	9.7	1.1	15.7	1.7	37	1 54.3	1 54.6	1 49.0	3.7	0.5	9.7	1.2	15.7	2.0
38	1 39.5	1 39.8	1 35.0	3.8	0.4	9.8	1.1	15.8	1.7	38	1 54.5	1 54.8	1 49.3	3.8	0.5	9.8	1.2	15.8	2.0
39	1 39.8	1 40.0	1 35.2	3.9	0.4	9.9	1.1	15.9	1.7	39	1 54.8	1 55.1	1 49.5	3.9	0.5	9.9	1.2	15.9	2.0
40	1 40.0	1 40.3	1 35.4	4.0	0.4	10.0	1.1	16.0	1.7	40	1 55.0	1 55.3	1 49.8	4.0	0.5	10.0	1.3	16.0	2.0
41	1 40.3	1 40.5	1 35.7	4.1	0.4	10.1	1.1	16.1	1.7	41	1 55.3	1 55.6	1 50.0	4.1	0.5	10.1	1.3	16.1	2.0
42	1 40.5	1 40.8	1 35.9	4.2	0.5	10.2	1.1	16.2	1.8	42	1 55.5	1 55.8	1 50.2	4.2	0.5	10.2	1.3	16.2	2.0
43	1 40.8	1 41.0	1 36.2	4.3	0.5	10.3	1.1	16.3	1.8	43	1 55.8	1 56.1	1 50.5	4.3	0.5	10.3	1.3	16.3	2.0
44	1 41.0	1 41.3	1 36.4	4.4	0.5	10.4	1.1	16.4	1.8	44	1 56.0	1 56.3	1 50.7	4.4	0.6	10.4	1.3	16.4	2.1
45	1 41.3	1 41.5	1 36.6	4.5	0.5	10.5	1.1	16.5	1.8	45	1 56.3	1 56.6	1 51.0	4.5	0.6	10.5	1.3	16.5	2.1
46	1 41.5	1 41.8	1 36.9	4.6	0.5	10.6	1.1	16.6	1.8	46	1 56.5	1 56.8	1 51.2	4.6	0.6	10.6	1.3	16.6	2.1
47	1 41.8	1 42.0	1 37.1	4.7	0.5	10.7	1.2	16.7	1.8	47	1 56.8	1 57.1	1 51.4	4.7	0.6	10.7	1.3	16.7	2.1
48	1 42.0	1 42.3	1 37.4	4.8	0.5	10.8	1.2	16.8	1.8	48	1 57.0	1 57.3	1 51.7	4.8	0.6	10.8	1.4	16.8	2.1
49	1 42.3	1 42.5	1 37.6	4.9	0.5	10.9	1.2	16.9	1.8	49	1 57.3	1 57.6	1 51.9	4.9	0.6	10.9	1.4	16.9	2.1
50	1 42.5	1 42.8	1 37.8	5.0	0.5	11.0	1.2	17.0	1.8	50	1 57.5	1 57.8	1 52.1	5.0	0.6	11.0	1.4	17.0	2.1
51	1 42.8	1 43.0	1 38.1	5.1	0.6	11.1	1.2	17.1	1.9	51	1 57.8	1 58.1	1 52.4	5.1	0.6	11.1	1.4	17.1	2.1
52	1 43.0	1 43.3	1 38.3	5.2	0.6	11.2	1.2	17.2	1.9	52	1 58.0	1 58.3	1 52.6	5.2	0.7	11.2	1.4	17.2	2.2
53	1 43.3	1 43.5	1 38.5	5.3	0.6	11.3	1.2	17.3	1.9	53	1 58.3	1 58.6	1 52.9	5.3	0.7	11.3	1.4	17.3	2.2
54	1 43.5	1 43.8	1 38.8	5.4	0.6	11.4	1.2	17.4	1.9	54	1 58.5	1 58.8	1 53.1	5.4	0.7	11.4	1.4	17.4	2.2
55	1 43.8	1 44.0	1 39.0	5.5	0.6	11.5	1.2	17.5	1.9	55	1 58.8	1 59.1	1 53.3	5.5	0.7	11.5	1.4	17.5	2.2
56	1 44.0	1 44.3	1 39.3	5.6	0.6	11.6	1.3	17.6	1.9	56	1 59.0	1 59.3	1 53.6	5.6	0.7	11.6	1.5	17.6	2.2
57	1 44.3	1 44.5	1 39.5	5.7	0.6	11.7	1.3	17.7	1.9	57	1 59.3	1 59.6	1 53.8	5.7	0.7	11.7	1.5	17.7	2.2
58	1 44.5	1 44.8	1 39.7	5.8	0.6	11.8	1.3	17.8	1.9	58	1 59.5	1 59.8	1 54.1	5.8	0.7	11.8	1.5	17.8	2.2
59	1 44.8	1 45.0	1 40.0	5.9	0.6	11.9	1.3	17.9	1.9	59	1 59.8	2 00.1	1 54.3	5.9	0.7	11.9	1.5	17.9	2.2
60	1 45.0	1 45.3	1 40.2	6.0	0.7	12.0	1.3	18.0	2.0	60	2 00.0	2 00.3	1 54.5	6.0	0.8	12.0	1.5	18.0	2.3

^m 8	SUN PLANETS	ARIES	MOON	$\frac{v}{d}$ or Corr ⁿ	$\frac{v}{d}$ or Corr ⁿ	$\frac{v}{d}$ or Corr ⁿ
s	° /	° /	° /	/ /	/ /	/ /
00	2 00.0	2 00.3	1 54.5	0.0 0.0	6.0 0.9	12.0 1.7
01	2 00.3	2 00.6	1 54.8	0.1 0.0	6.1 0.9	12.1 1.7
02	2 00.5	2 00.8	1 55.0	0.2 0.0	6.2 0.9	12.2 1.7
03	2 00.8	2 01.1	1 55.2	0.3 0.0	6.3 0.9	12.3 1.7
04	2 01.0	2 01.3	1 55.5	0.4 0.1	6.4 0.9	12.4 1.8
05	2 01.3	2 01.6	1 55.7	0.5 0.1	6.5 0.9	12.5 1.8
06	2 01.5	2 01.8	1 56.0	0.6 0.1	6.6 0.9	12.6 1.8
07	2 01.8	2 02.1	1 56.2	0.7 0.1	6.7 0.9	12.7 1.8
08	2 02.0	2 02.3	1 56.4	0.8 0.1	6.8 1.0	12.8 1.8
09	2 02.3	2 02.6	1 56.7	0.9 0.1	6.9 1.0	12.9 1.8
10	2 02.5	2 02.8	1 56.9	1.0 0.1	7.0 1.0	13.0 1.8
11	2 02.8	2 03.1	1 57.2	1.1 0.2	7.1 1.0	13.1 1.9
12	2 03.0	2 03.3	1 57.4	1.2 0.2	7.2 1.0	13.2 1.9
13	2 03.3	2 03.6	1 57.6	1.3 0.2	7.3 1.0	13.3 1.9
14	2 03.5	2 03.8	1 57.9	1.4 0.2	7.4 1.0	13.4 1.9
15	2 03.8	2 04.1	1 58.1	1.5 0.2	7.5 1.1	13.5 1.9
16	2 04.0	2 04.3	1 58.4	1.6 0.2	7.6 1.1	13.6 1.9
17	2 04.3	2 04.6	1 58.6	1.7 0.2	7.7 1.1	13.7 1.9
18	2 04.5	2 04.8	1 58.8	1.8 0.3	7.8 1.1	13.8 2.0
19	2 04.8	2 05.1	1 59.1	1.9 0.3	7.9 1.1	13.9 2.0
20	2 05.0	2 05.3	1 59.3	2.0 0.3	8.0 1.1	14.0 2.0
21	2 05.3	2 05.6	1 59.5	2.1 0.3	8.1 1.1	14.1 2.0
22	2 05.5	2 05.8	1 59.8	2.2 0.3	8.2 1.2	14.2 2.0
23	2 05.8	2 06.1	2 00.0	2.3 0.3	8.3 1.2	14.3 2.0
24	2 06.0	2 06.3	2 00.3	2.4 0.3	8.4 1.2	14.4 2.0
25	2 06.3	2 06.6	2 00.5	2.5 0.4	8.5 1.2	14.5 2.1
26	2 06.5	2 06.8	2 00.7	2.6 0.4	8.6 1.2	14.6 2.1
27	2 06.8	2 07.1	2 01.0	2.7 0.4	8.7 1.2	14.7 2.1
28	2 07.0	2 07.3	2 01.2	2.8 0.4	8.8 1.2	14.8 2.1
29	2 07.3	2 07.6	2 01.5	2.9 0.4	8.9 1.3	14.9 2.1
30	2 07.5	2 07.8	2 01.7	3.0 0.4	9.0 1.3	15.0 2.1
31	2 07.8	2 08.1	2 01.9	3.1 0.4	9.1 1.3	15.1 2.1
32	2 08.0	2 08.4	2 02.2	3.2 0.5	9.2 1.3	15.2 2.2
33	2 08.3	2 08.6	2 02.4	3.3 0.5	9.3 1.3	15.3 2.2
34	2 08.5	2 08.9	2 02.6	3.4 0.5	9.4 1.3	15.4 2.2
35	2 08.8	2 09.1	2 02.9	3.5 0.5	9.5 1.3	15.5 2.2
36	2 09.0	2 09.4	2 03.1	3.6 0.5	9.6 1.4	15.6 2.2
37	2 09.3	2 09.6	2 03.4	3.7 0.5	9.7 1.4	15.7 2.2
38	2 09.5	2 09.9	2 03.6	3.8 0.5	9.8 1.4	15.8 2.2
39	2 09.8	2 10.1	2 03.8	3.9 0.6	9.9 1.4	15.9 2.3
40	2 10.0	2 10.4	2 04.1	4.0 0.6	10.0 1.4	16.0 2.3
41	2 10.3	2 10.6	2 04.3	4.1 0.6	10.1 1.4	16.1 2.3
42	2 10.5	2 10.9	2 04.6	4.2 0.6	10.2 1.4	16.2 2.3
43	2 10.8	2 11.1	2 04.8	4.3 0.6	10.3 1.5	16.3 2.3
44	2 11.0	2 11.4	2 05.0	4.4 0.6	10.4 1.5	16.4 2.3
45	2 11.3	2 11.6	2 05.3	4.5 0.6	10.5 1.5	16.5 2.3
46	2 11.5	2 11.9	2 05.5	4.6 0.7	10.6 1.5	16.6 2.4
47	2 11.8	2 12.1	2 05.7	4.7 0.7	10.7 1.5	16.7 2.4
48	2 12.0	2 12.4	2 06.0	4.8 0.7	10.8 1.5	16.8 2.4
49	2 12.3	2 12.6	2 06.2	4.9 0.7	10.9 1.5	16.9 2.4
50	2 12.5	2 12.9	2 06.5	5.0 0.7	11.0 1.6	17.0 2.4
51	2 12.8	2 13.1	2 06.7	5.1 0.7	11.1 1.6	17.1 2.4
52	2 13.0	2 13.4	2 06.9	5.2 0.7	11.2 1.6	17.2 2.4
53	2 13.3	2 13.6	2 07.2	5.3 0.8	11.3 1.6	17.3 2.5
54	2 13.5	2 13.9	2 07.4	5.4 0.8	11.4 1.6	17.4 2.5
55	2 13.8	2 14.1	2 07.7	5.5 0.8	11.5 1.6	17.5 2.5
56	2 14.0	2 14.4	2 07.9	5.6 0.8	11.6 1.6	17.6 2.5
57	2 14.3	2 14.6	2 08.1	5.7 0.8	11.7 1.7	17.7 2.5
58	2 14.5	2 14.9	2 08.4	5.8 0.8	11.8 1.7	17.8 2.5
59	2 14.8	2 15.1	2 08.6	5.9 0.8	11.9 1.7	17.9 2.5
60	2 15.0	2 15.4	2 08.9	6.0 0.9	12.0 1.7	18.0 2.6

^m 9	SUN PLANETS	ARIES	MOON	$\frac{v}{d}$ or Corr ⁿ	$\frac{v}{d}$ or Corr ⁿ	$\frac{v}{d}$ or Corr ⁿ
s	° /	° /	° /	/ /	/ /	/ /
00	2 15.0	2 15.4	2 08.9	0.0 0.0	6.0 1.0	12.0 1.9
01	2 15.3	2 15.6	2 09.1	0.1 0.0	6.1 1.0	12.1 1.9
02	2 15.5	2 15.9	2 09.3	0.2 0.0	6.2 1.0	12.2 1.9
03	2 15.8	2 16.1	2 09.6	0.3 0.0	6.3 1.0	12.3 1.9
04	2 16.0	2 16.4	2 09.8	0.4 0.1	6.4 1.0	12.4 2.0
05	2 16.3	2 16.6	2 10.0	0.5 0.1	6.5 1.0	12.5 2.0
06	2 16.5	2 16.9	2 10.3	0.6 0.1	6.6 1.0	12.6 2.0
07	2 16.8	2 17.1	2 10.5	0.7 0.1	6.7 1.1	12.7 2.0
08	2 17.0	2 17.4	2 10.8	0.8 0.1	6.8 1.1	12.8 2.0
09	2 17.3	2 17.6	2 11.0	0.9 0.1	6.9 1.1	12.9 2.0
10	2 17.5	2 17.9	2 11.2	1.0 0.2	7.0 1.1	13.0 2.1
11	2 17.8	2 18.1	2 11.5	1.1 0.2	7.1 1.1	13.1 2.1
12	2 18.0	2 18.4	2 11.7	1.2 0.2	7.2 1.1	13.2 2.1
13	2 18.3	2 18.6	2 12.0	1.3 0.2	7.3 1.2	13.3 2.1
14	2 18.5	2 18.9	2 12.2	1.4 0.2	7.4 1.2	13.4 2.1
15	2 18.8	2 19.1	2 12.4	1.5 0.2	7.5 1.2	13.5 2.1
16	2 19.0	2 19.4	2 12.7	1.6 0.3	7.6 1.2	13.6 2.2
17	2 19.3	2 19.6	2 12.9	1.7 0.3	7.7 1.2	13.7 2.2
18	2 19.5	2 19.9	2 13.1	1.8 0.3	7.8 1.2	13.8 2.2
19	2 19.8	2 20.1	2 13.4	1.9 0.3	7.9 1.3	13.9 2.2
20	2 20.0	2 20.4	2 13.6	2.0 0.3	8.0 1.3	14.0 2.2
21	2 20.3	2 20.6	2 13.9	2.1 0.3	8.1 1.3	14.1 2.2
22	2 20.5	2 20.9	2 14.1	2.2 0.3	8.2 1.3	14.2 2.2
23	2 20.8	2 21.1	2 14.3	2.3 0.4	8.3 1.3	14.3 2.3
24	2 21.0	2 21.4	2 14.6	2.4 0.4	8.4 1.3	14.4 2.3
25	2 21.3	2 21.6	2 14.8	2.5 0.4	8.5 1.3	14.5 2.3
26	2 21.5	2 21.9	2 15.1	2.6 0.4	8.6 1.4	14.6 2.3
27	2 21.8	2 22.1	2 15.3	2.7 0.4	8.7 1.4	14.7 2.3
28	2 22.0	2 22.4	2 15.5	2.8 0.4	8.8 1.4	14.8 2.3
29	2 22.3	2 22.6	2 15.8	2.9 0.5	8.9 1.4	14.9 2.4
30	2 22.5	2 22.9	2 16.0	3.0 0.5	9.0 1.4	15.0 2.4
31	2 22.8	2 23.1	2 16.2	3.1 0.5	9.1 1.4	15.1 2.4
32	2 23.0	2 23.4	2 16.5	3.2 0.5	9.2 1.5	15.2 2.4
33	2 23.3	2 23.6	2 16.7	3.3 0.5	9.3 1.5	15.3 2.4
34	2 23.5	2 23.9	2 17.0	3.4 0.5	9.4 1.5	15.4 2.4
35	2 23.8	2 24.1	2 17.2	3.5 0.6	9.5 1.5	15.5 2.5
36	2 24.0	2 24.4	2 17.4	3.6 0.6	9.6 1.5	15.6 2.5
37	2 24.3	2 24.6	2 17.7	3.7 0.6	9.7 1.5	15.7 2.5
38	2 24.5	2 24.9	2 17.9	3.8 0.6	9.8 1.6	15.8 2.5
39	2 24.8	2 25.1	2 18.2	3.9 0.6	9.9 1.6	15.9 2.5
40	2 25.0	2 25.4	2 18.4	4.0 0.6	10.0 1.6	16.0 2.5
41	2 25.3	2 25.6	2 18.6	4.1 0.6	10.1 1.6	16.1 2.5
42	2 25.5	2 25.9	2 18.9	4.2 0.7	10.2 1.6	16.2 2.6
43	2 25.8	2 26.1	2 19.1	4.3 0.7	10.3 1.6	16.3 2.6
44	2 26.0	2 26.4	2 19.3	4.4 0.7	10.4 1.6	16.4 2.6
45	2 26.3	2 26.7	2 19.6	4.5 0.7	10.5 1.7	16.5 2.6
46	2 26.5	2 26.9	2 19.8	4.6 0.7	10.6 1.7	16.6 2.6
47	2 26.8	2 27.2	2 20.1	4.7 0.7	10.7 1.7	16.7 2.6
48	2 27.0	2 27.4	2 20.3	4.8 0.8	10.8 1.7	16.8 2.7
49	2 27.3	2 27.7	2 20.5	4.9 0.8	10.9 1.7	16.9 2.7
50	2 27.5	2 27.9	2 20.8	5.0 0.8	11.0 1.7	17.0 2.7
51	2 27.8	2 28.2	2 21.0	5.1 0.8	11.1 1.8	17.1 2.7
52	2 28.0	2 28.4	2 21.3	5.2 0.8	11.2 1.8	17.2 2.7
53	2 28.3	2 28.7	2 21.5	5.3 0.8	11.3 1.8	17.3 2.7
54	2 28.5	2 28.9	2 21.7	5.4 0.9	11.4 1.8	17.4 2.8
55	2 28.8	2 29.2	2 22.0	5.5 0.9	11.5 1.8	17.5 2.8
56	2 29.0	2 29.4	2 22.2	5.6 0.9	11.6 1.8	17.6 2.8
57	2 29.3	2 29.7	2 22.5	5.7 0.9	11.7 1.9	17.7 2.8
58	2 29.5	2 29.9	2 22.7	5.8 0.9	11.8 1.9	17.8 2.8
59	2 29.8	2 30.2	2 22.9	5.9 0.9	11.9 1.9	17.9 2.8
60	2 30.0	2 30.4	2 23.2	6.0 1.0	12.0 1.9	18.0 2.9

^m 10	SUN PLANETS	ARIES	MOON	ν or d	Corr ⁿ	ν or d	Corr ⁿ	ν or d	Corr ⁿ
s	o	o	o	/	/	/	/	/	/
00	2 30.0	2 30.4	2 23.2	0.0	0.0	6.0	1.1	12.0	2.1
01	2 30.3	2 30.7	2 23.4	0.1	0.0	6.1	1.1	12.1	2.1
02	2 30.5	2 30.9	2 23.6	0.2	0.0	6.2	1.1	12.2	2.1
03	2 30.8	2 31.2	2 23.9	0.3	0.1	6.3	1.1	12.3	2.2
04	2 31.0	2 31.4	2 24.1	0.4	0.1	6.4	1.1	12.4	2.2
05	2 31.3	2 31.7	2 24.4	0.5	0.1	6.5	1.1	12.5	2.2
06	2 31.5	2 31.9	2 24.6	0.6	0.1	6.6	1.2	12.6	2.2
07	2 31.8	2 32.2	2 24.8	0.7	0.1	6.7	1.2	12.7	2.2
08	2 32.0	2 32.4	2 25.1	0.8	0.1	6.8	1.2	12.8	2.2
09	2 32.3	2 32.7	2 25.3	0.9	0.2	6.9	1.2	12.9	2.3
10	2 32.5	2 32.9	2 25.6	1.0	0.2	7.0	1.2	13.0	2.3
11	2 32.8	2 33.2	2 25.8	1.1	0.2	7.1	1.2	13.1	2.3
12	2 33.0	2 33.4	2 26.0	1.2	0.2	7.2	1.3	13.2	2.3
13	2 33.3	2 33.7	2 26.3	1.3	0.2	7.3	1.3	13.3	2.3
14	2 33.5	2 33.9	2 26.5	1.4	0.2	7.4	1.3	13.4	2.3
15	2 33.8	2 34.2	2 26.7	1.5	0.3	7.5	1.3	13.5	2.4
16	2 34.0	2 34.4	2 27.0	1.6	0.3	7.6	1.3	13.6	2.4
17	2 34.3	2 34.7	2 27.2	1.7	0.3	7.7	1.3	13.7	2.4
18	2 34.5	2 34.9	2 27.5	1.8	0.3	7.8	1.4	13.8	2.4
19	2 34.8	2 35.2	2 27.7	1.9	0.3	7.9	1.4	13.9	2.4
20	2 35.0	2 35.4	2 27.9	2.0	0.4	8.0	1.4	14.0	2.5
21	2 35.3	2 35.7	2 28.2	2.1	0.4	8.1	1.4	14.1	2.5
22	2 35.5	2 35.9	2 28.4	2.2	0.4	8.2	1.4	14.2	2.5
23	2 35.8	2 36.2	2 28.7	2.3	0.4	8.3	1.5	14.3	2.5
24	2 36.0	2 36.4	2 28.9	2.4	0.4	8.4	1.5	14.4	2.5
25	2 36.3	2 36.7	2 29.1	2.5	0.4	8.5	1.5	14.5	2.5
26	2 36.5	2 36.9	2 29.4	2.6	0.5	8.6	1.5	14.6	2.6
27	2 36.8	2 37.2	2 29.6	2.7	0.5	8.7	1.5	14.7	2.6
28	2 37.0	2 37.4	2 29.8	2.8	0.5	8.8	1.5	14.8	2.6
29	2 37.3	2 37.7	2 30.1	2.9	0.5	8.9	1.6	14.9	2.6
30	2 37.5	2 37.9	2 30.3	3.0	0.5	9.0	1.6	15.0	2.6
31	2 37.8	2 38.2	2 30.6	3.1	0.5	9.1	1.6	15.1	2.6
32	2 38.0	2 38.4	2 30.8	3.2	0.6	9.2	1.6	15.2	2.7
33	2 38.3	2 38.7	2 31.0	3.3	0.6	9.3	1.6	15.3	2.7
34	2 38.5	2 38.9	2 31.3	3.4	0.6	9.4	1.6	15.4	2.7
35	2 38.8	2 39.2	2 31.5	3.5	0.6	9.5	1.7	15.5	2.7
36	2 39.0	2 39.4	2 31.8	3.6	0.6	9.6	1.7	15.6	2.7
37	2 39.3	2 39.7	2 32.0	3.7	0.6	9.7	1.7	15.7	2.7
38	2 39.5	2 39.9	2 32.2	3.8	0.7	9.8	1.7	15.8	2.8
39	2 39.8	2 40.2	2 32.5	3.9	0.7	9.9	1.7	15.9	2.8
40	2 40.0	2 40.4	2 32.7	4.0	0.7	10.0	1.8	16.0	2.8
41	2 40.3	2 40.7	2 32.9	4.1	0.7	10.1	1.8	16.1	2.8
42	2 40.5	2 40.9	2 33.2	4.2	0.7	10.2	1.8	16.2	2.8
43	2 40.8	2 41.2	2 33.4	4.3	0.8	10.3	1.8	16.3	2.9
44	2 41.0	2 41.4	2 33.7	4.4	0.8	10.4	1.8	16.4	2.9
45	2 41.3	2 41.7	2 33.9	4.5	0.8	10.5	1.8	16.5	2.9
46	2 41.5	2 41.9	2 34.1	4.6	0.8	10.6	1.9	16.6	2.9
47	2 41.8	2 42.2	2 34.4	4.7	0.8	10.7	1.9	16.7	2.9
48	2 42.0	2 42.4	2 34.6	4.8	0.8	10.8	1.9	16.8	2.9
49	2 42.3	2 42.7	2 34.9	4.9	0.9	10.9	1.9	16.9	3.0
50	2 42.5	2 42.9	2 35.1	5.0	0.9	11.0	1.9	17.0	3.0
51	2 42.8	2 43.2	2 35.3	5.1	0.9	11.1	1.9	17.1	3.0
52	2 43.0	2 43.4	2 35.6	5.2	0.9	11.2	2.0	17.2	3.0
53	2 43.3	2 43.7	2 35.8	5.3	0.9	11.3	2.0	17.3	3.0
54	2 43.5	2 43.9	2 36.1	5.4	0.9	11.4	2.0	17.4	3.0
55	2 43.8	2 44.2	2 36.3	5.5	1.0	11.5	2.0	17.5	3.1
56	2 44.0	2 44.4	2 36.5	5.6	1.0	11.6	2.0	17.6	3.1
57	2 44.3	2 44.7	2 36.8	5.7	1.0	11.7	2.0	17.7	3.1
58	2 44.5	2 45.0	2 37.0	5.8	1.0	11.8	2.1	17.8	3.1
59	2 44.8	2 45.2	2 37.2	5.9	1.0	11.9	2.1	17.9	3.1
60	2 45.0	2 45.5	2 37.5	6.0	1.1	12.0	2.1	18.0	3.2

^m 11	SUN PLANETS	ARIES	MOON	ν or d	Corr ⁿ	ν or d	Corr ⁿ	ν or d	Corr ⁿ
s	o	o	o	/	/	/	/	/	/
00	2 45.0	2 45.5	2 37.5	0.0	0.0	6.0	1.2	12.0	2.3
01	2 45.3	2 45.7	2 37.7	0.1	0.0	6.1	1.2	12.1	2.3
02	2 45.5	2 46.0	2 38.0	0.2	0.0	6.2	1.2	12.2	2.3
03	2 45.8	2 46.2	2 38.2	0.3	0.1	6.3	1.2	12.3	2.4
04	2 46.0	2 46.5	2 38.4	0.4	0.1	6.4	1.2	12.4	2.4
05	2 46.3	2 46.7	2 38.7	0.5	0.1	6.5	1.2	12.5	2.4
06	2 46.5	2 47.0	2 38.9	0.6	0.1	6.6	1.3	12.6	2.4
07	2 46.8	2 47.2	2 39.2	0.7	0.1	6.7	1.3	12.7	2.4
08	2 47.0	2 47.5	2 39.4	0.8	0.2	6.8	1.3	12.8	2.5
09	2 47.3	2 47.7	2 39.6	0.9	0.2	6.9	1.3	12.9	2.5
10	2 47.5	2 48.0	2 39.9	1.0	0.2	7.0	1.3	13.0	2.5
11	2 47.8	2 48.2	2 40.1	1.1	0.2	7.1	1.4	13.1	2.5
12	2 48.0	2 48.5	2 40.3	1.2	0.2	7.2	1.4	13.2	2.5
13	2 48.3	2 48.7	2 40.6	1.3	0.2	7.3	1.4	13.3	2.5
14	2 48.5	2 49.0	2 40.8	1.4	0.3	7.4	1.4	13.4	2.6
15	2 48.8	2 49.2	2 41.1	1.5	0.3	7.5	1.4	13.5	2.6
16	2 49.0	2 49.5	2 41.3	1.6	0.3	7.6	1.5	13.6	2.6
17	2 49.3	2 49.7	2 41.5	1.7	0.3	7.7	1.5	13.7	2.6
18	2 49.5	2 50.0	2 41.8	1.8	0.3	7.8	1.5	13.8	2.6
19	2 49.8	2 50.2	2 42.0	1.9	0.4	7.9	1.5	13.9	2.7
20	2 50.0	2 50.5	2 42.3	2.0	0.4	8.0	1.5	14.0	2.7
21	2 50.3	2 50.7	2 42.5	2.1	0.4	8.1	1.6	14.1	2.7
22	2 50.5	2 51.0	2 42.7	2.2	0.4	8.2	1.6	14.2	2.7
23	2 50.8	2 51.2	2 43.0	2.3	0.4	8.3	1.6	14.3	2.7
24	2 51.0	2 51.5	2 43.2	2.4	0.5	8.4	1.6	14.4	2.8
25	2 51.3	2 51.7	2 43.4	2.5	0.5	8.5	1.6	14.5	2.8
26	2 51.5	2 52.0	2 43.7	2.6	0.5	8.6	1.6	14.6	2.8
27	2 51.8	2 52.2	2 43.9	2.7	0.5	8.7	1.7	14.7	2.8
28	2 52.0	2 52.5	2 44.2	2.8	0.5	8.8	1.7	14.8	2.8
29	2 52.3	2 52.7	2 44.4	2.9	0.6	8.9	1.7	14.9	2.9
30	2 52.5	2 53.0	2 44.6	3.0	0.6	9.0	1.7	15.0	2.9
31	2 52.8	2 53.2	2 44.9	3.1	0.6	9.1	1.7	15.1	2.9
32	2 53.0	2 53.5	2 45.1	3.2	0.6	9.2	1.8	15.2	2.9
33	2 53.3	2 53.7	2 45.4	3.3	0.6	9.3	1.8	15.3	2.9
34	2 53.5	2 54.0	2 45.6	3.4	0.7	9.4	1.8	15.4	3.0
35	2 53.8	2 54.2	2 45.8	3.5	0.7	9.5	1.8	15.5	3.0
36	2 54.0	2 54.5	2 46.1	3.6	0.7	9.6	1.8	15.6	3.0
37	2 54.3	2 54.7	2 46.3	3.7	0.7	9.7	1.9	15.7	3.0
38	2 54.5	2 55.0	2 46.6	3.8	0.7	9.8	1.9	15.8	3.0
39	2 54.8	2 55.2	2 46.8	3.9	0.7	9.9	1.9	15.9	3.0
40	2 55.0	2 55.5	2 47.0	4.0	0.8	10.0	1.9	16.0	3.1
41	2 55.3	2 55.7	2 47.3	4.1	0.8	10.1	1.9	16.1	3.1
42	2 55.5	2 56.0	2 47.5	4.2	0.8	10.2	2.0	16.2	3.1
43	2 55.8	2 56.2	2 47.7	4.3	0.8	10.3	2.0	16.3	3.1
44	2 56.0	2 56.5	2 48.0	4.4	0.8	10.4	2.0	16.4	3.1
45	2 56.3	2 56.7	2 48.2	4.5	0.9	10.5	2.0	16.5	3.2
46	2 56.5	2 57.0	2 48.5	4.6	0.9	10.6	2.0	16.6	3.2
47	2 56.8	2 57.2	2 48.7	4.7	0.9	10.7	2.1	16.7	3.2
48	2 57.0	2 57.5	2 48.9	4.8	0.9	10.8	2.1	16.8	3.2
49	2 57.3	2 57.7	2 49.2	4.9	0.9	10.9	2.1	16.9	3.2
50	2 57.5	2 58.0	2 49.4	5.0	1.0	11.0	2.1	17.0	3.3
51	2 57.8	2 58.2	2 49.7	5.1	1.0	11.1	2.1	17.1	3.3
52	2 58.0	2 58.5	2 49.9	5.2	1.0	11.2	2.1	17.2	3.3
53	2 58.3	2 58.7	2 50.1	5.3	1.0	11.3	2.2	17.3	3.3
54	2 58.5	2 59.0	2 50.4	5.4	1.0	11.4	2.2	17.4	3.3
55	2 58.8	2 59.2	2 50.6	5.5	1.1	11.5	2.2	17.5	3.4
56	2 59.0	2 59.5	2 50.8	5.6	1.1	11.6	2.2	17.6	3.4
57	2 59.3	2 59.7	2 51.1	5.7	1.1	11.7	2.2	17.7	3.4
58	2 59.5	3 00.0	2 51.3	5.8	1.1	11.8	2.3	17.8	3.4
59	2 59.8	3 00.2	2 51.6	5.9	1.1	11.9	2.3	17.9	3.4
60	3 00.0	3 00.5	2 51.8	6.0	1.2	12.0	2.3	18.0	3.5

12	SUN PLANETS	ARIES	MOON	$\frac{v}{d}$ or Corr ⁿ	$\frac{v}{d}$ or Corr ⁿ	$\frac{v}{d}$ or Corr ⁿ
00	3 00.0	3 00.5	2 51.8	0.0 0.0	6.0 1.3	12.0 2.5
01	3 00.3	3 00.7	2 52.0	0.1 0.0	6.1 1.3	12.1 2.5
02	3 00.5	3 01.0	2 52.3	0.2 0.0	6.2 1.3	12.2 2.5
03	3 00.8	3 01.2	2 52.5	0.3 0.1	6.3 1.3	12.3 2.6
04	3 01.0	3 01.5	2 52.8	0.4 0.1	6.4 1.3	12.4 2.6
05	3 01.3	3 01.7	2 53.0	0.5 0.1	6.5 1.4	12.5 2.6
06	3 01.5	3 02.0	2 53.2	0.6 0.1	6.6 1.4	12.6 2.6
07	3 01.8	3 02.2	2 53.5	0.7 0.1	6.7 1.4	12.7 2.6
08	3 02.0	3 02.5	2 53.7	0.8 0.2	6.8 1.4	12.8 2.7
09	3 02.3	3 02.7	2 53.9	0.9 0.2	6.9 1.4	12.9 2.7
10	3 02.5	3 03.0	2 54.2	1.0 0.2	7.0 1.5	13.0 2.7
11	3 02.8	3 03.3	2 54.4	1.1 0.2	7.1 1.5	13.1 2.7
12	3 03.0	3 03.5	2 54.7	1.2 0.3	7.2 1.5	13.2 2.8
13	3 03.3	3 03.8	2 54.9	1.3 0.3	7.3 1.5	13.3 2.8
14	3 03.5	3 04.0	2 55.1	1.4 0.3	7.4 1.5	13.4 2.8
15	3 03.8	3 04.3	2 55.4	1.5 0.3	7.5 1.6	13.5 2.8
16	3 04.0	3 04.5	2 55.6	1.6 0.3	7.6 1.6	13.6 2.8
17	3 04.3	3 04.8	2 55.9	1.7 0.4	7.7 1.6	13.7 2.9
18	3 04.5	3 05.0	2 56.1	1.8 0.4	7.8 1.6	13.8 2.9
19	3 04.8	3 05.3	2 56.3	1.9 0.4	7.9 1.6	13.9 2.9
20	3 05.0	3 05.5	2 56.6	2.0 0.4	8.0 1.7	14.0 2.9
21	3 05.3	3 05.8	2 56.8	2.1 0.4	8.1 1.7	14.1 2.9
22	3 05.5	3 06.0	2 57.0	2.2 0.5	8.2 1.7	14.2 3.0
23	3 05.8	3 06.3	2 57.3	2.3 0.5	8.3 1.7	14.3 3.0
24	3 06.0	3 06.5	2 57.5	2.4 0.5	8.4 1.8	14.4 3.0
25	3 06.3	3 06.8	2 57.8	2.5 0.5	8.5 1.8	14.5 3.0
26	3 06.5	3 07.0	2 58.0	2.6 0.5	8.6 1.8	14.6 3.0
27	3 06.8	3 07.3	2 58.2	2.7 0.6	8.7 1.8	14.7 3.1
28	3 07.0	3 07.5	2 58.5	2.8 0.6	8.8 1.8	14.8 3.1
29	3 07.3	3 07.8	2 58.7	2.9 0.6	8.9 1.9	14.9 3.1
30	3 07.5	3 08.0	2 59.0	3.0 0.6	9.0 1.9	15.0 3.1
31	3 07.8	3 08.3	2 59.2	3.1 0.6	9.1 1.9	15.1 3.1
32	3 08.0	3 08.5	2 59.4	3.2 0.7	9.2 1.9	15.2 3.2
33	3 08.3	3 08.8	2 59.7	3.3 0.7	9.3 1.9	15.3 3.2
34	3 08.5	3 09.0	2 59.9	3.4 0.7	9.4 2.0	15.4 3.2
35	3 08.8	3 09.3	3 00.2	3.5 0.7	9.5 2.0	15.5 3.2
36	3 09.0	3 09.5	3 00.4	3.6 0.8	9.6 2.0	15.6 3.3
37	3 09.3	3 09.8	3 00.6	3.7 0.8	9.7 2.0	15.7 3.3
38	3 09.5	3 10.0	3 00.9	3.8 0.8	9.8 2.0	15.8 3.3
39	3 09.8	3 10.3	3 01.1	3.9 0.8	9.9 2.1	15.9 3.3
40	3 10.0	3 10.5	3 01.3	4.0 0.8	10.0 2.1	16.0 3.3
41	3 10.3	3 10.8	3 01.6	4.1 0.9	10.1 2.1	16.1 3.4
42	3 10.5	3 11.0	3 01.8	4.2 0.9	10.2 2.1	16.2 3.4
43	3 10.8	3 11.3	3 02.1	4.3 0.9	10.3 2.1	16.3 3.4
44	3 11.0	3 11.5	3 02.3	4.4 0.9	10.4 2.2	16.4 3.4
45	3 11.3	3 11.8	3 02.5	4.5 0.9	10.5 2.2	16.5 3.4
46	3 11.5	3 12.0	3 02.8	4.6 1.0	10.6 2.2	16.6 3.5
47	3 11.8	3 12.3	3 03.0	4.7 1.0	10.7 2.2	16.7 3.5
48	3 12.0	3 12.5	3 03.3	4.8 1.0	10.8 2.3	16.8 3.5
49	3 12.3	3 12.8	3 03.5	4.9 1.0	10.9 2.3	16.9 3.5
50	3 12.5	3 13.0	3 03.7	5.0 1.0	11.0 2.3	17.0 3.5
51	3 12.8	3 13.3	3 04.0	5.1 1.1	11.1 2.3	17.1 3.6
52	3 13.0	3 13.5	3 04.2	5.2 1.1	11.2 2.3	17.2 3.6
53	3 13.3	3 13.8	3 04.4	5.3 1.1	11.3 2.4	17.3 3.6
54	3 13.5	3 14.0	3 04.7	5.4 1.1	11.4 2.4	17.4 3.6
55	3 13.8	3 14.3	3 04.9	5.5 1.1	11.5 2.4	17.5 3.6
56	3 14.0	3 14.5	3 05.2	5.6 1.2	11.6 2.4	17.6 3.7
57	3 14.3	3 14.8	3 05.4	5.7 1.2	11.7 2.4	17.7 3.7
58	3 14.5	3 15.0	3 05.6	5.8 1.2	11.8 2.5	17.8 3.7
59	3 14.8	3 15.3	3 05.9	5.9 1.2	11.9 2.5	17.9 3.7
60	3 15.0	3 15.5	3 06.1	6.0 1.3	12.0 2.5	18.0 3.8

13	SUN PLANETS	ARIES	MOON	$\frac{v}{d}$ or Corr ⁿ	$\frac{v}{d}$ or Corr ⁿ	$\frac{v}{d}$ or Corr ⁿ
00	3 15.0	3 15.5	3 06.1	0.0 0.0	6.0 1.4	12.0 2.7
01	3 15.3	3 15.8	3 06.4	0.1 0.0	6.1 1.4	12.1 2.7
02	3 15.5	3 16.0	3 06.6	0.2 0.0	6.2 1.4	12.2 2.7
03	3 15.8	3 16.3	3 06.8	0.3 0.1	6.3 1.4	12.3 2.8
04	3 16.0	3 16.5	3 07.1	0.4 0.1	6.4 1.4	12.4 2.8
05	3 16.3	3 16.8	3 07.3	0.5 0.1	6.5 1.5	12.5 2.8
06	3 16.5	3 17.0	3 07.5	0.6 0.1	6.6 1.5	12.6 2.8
07	3 16.8	3 17.3	3 07.8	0.7 0.2	6.7 1.5	12.7 2.9
08	3 17.0	3 17.5	3 08.0	0.8 0.2	6.8 1.5	12.8 2.9
09	3 17.3	3 17.8	3 08.3	0.9 0.2	6.9 1.6	12.9 2.9
10	3 17.5	3 18.0	3 08.5	1.0 0.2	7.0 1.6	13.0 2.9
11	3 17.8	3 18.3	3 08.7	1.1 0.2	7.1 1.6	13.1 2.9
12	3 18.0	3 18.5	3 09.0	1.2 0.3	7.2 1.6	13.2 3.0
13	3 18.3	3 18.8	3 09.2	1.3 0.3	7.3 1.6	13.3 3.0
14	3 18.5	3 19.0	3 09.5	1.4 0.3	7.4 1.7	13.4 3.0
15	3 18.8	3 19.3	3 09.7	1.5 0.3	7.5 1.7	13.5 3.0
16	3 19.0	3 19.5	3 09.9	1.6 0.4	7.6 1.7	13.6 3.1
17	3 19.3	3 19.8	3 10.2	1.7 0.4	7.7 1.7	13.7 3.1
18	3 19.5	3 20.0	3 10.4	1.8 0.4	7.8 1.8	13.8 3.1
19	3 19.8	3 20.3	3 10.7	1.9 0.4	7.9 1.8	13.9 3.1
20	3 20.0	3 20.5	3 10.9	2.0 0.5	8.0 1.8	14.0 3.2
21	3 20.3	3 20.8	3 11.1	2.1 0.5	8.1 1.8	14.1 3.2
22	3 20.5	3 21.0	3 11.4	2.2 0.5	8.2 1.8	14.2 3.2
23	3 20.8	3 21.3	3 11.6	2.3 0.5	8.3 1.9	14.3 3.2
24	3 21.0	3 21.6	3 11.8	2.4 0.5	8.4 1.9	14.4 3.2
25	3 21.3	3 21.8	3 12.1	2.5 0.6	8.5 1.9	14.5 3.3
26	3 21.5	3 22.1	3 12.3	2.6 0.6	8.6 1.9	14.6 3.3
27	3 21.8	3 22.3	3 12.6	2.7 0.6	8.7 2.0	14.7 3.3
28	3 22.0	3 22.6	3 12.8	2.8 0.6	8.8 2.0	14.8 3.3
29	3 22.3	3 22.8	3 13.0	2.9 0.7	8.9 2.0	14.9 3.4
30	3 22.5	3 23.1	3 13.3	3.0 0.7	9.0 2.0	15.0 3.4
31	3 22.8	3 23.3	3 13.5	3.1 0.7	9.1 2.0	15.1 3.4
32	3 23.0	3 23.6	3 13.8	3.2 0.7	9.2 2.1	15.2 3.4
33	3 23.3	3 23.8	3 14.0	3.3 0.7	9.3 2.1	15.3 3.4
34	3 23.5	3 24.1	3 14.2	3.4 0.8	9.4 2.1	15.4 3.5
35	3 23.8	3 24.3	3 14.5	3.5 0.8	9.5 2.1	15.5 3.5
36	3 24.0	3 24.6	3 14.7	3.6 0.8	9.6 2.2	15.6 3.5
37	3 24.3	3 24.8	3 14.9	3.7 0.8	9.7 2.2	15.7 3.5
38	3 24.5	3 25.1	3 15.2	3.8 0.9	9.8 2.2	15.8 3.6
39	3 24.8	3 25.3	3 15.4	3.9 0.9	9.9 2.2	15.9 3.6
40	3 25.0	3 25.6	3 15.7	4.0 0.9	10.0 2.3	16.0 3.6
41	3 25.3	3 25.8	3 15.9	4.1 0.9	10.1 2.3	16.1 3.6
42	3 25.5	3 26.1	3 16.1	4.2 0.9	10.2 2.3	16.2 3.6
43	3 25.8	3 26.3	3 16.4	4.3 1.0	10.3 2.3	16.3 3.7
44	3 26.0	3 26.6	3 16.6	4.4 1.0	10.4 2.3	16.4 3.7
45	3 26.3	3 26.8	3 16.9	4.5 1.0	10.5 2.4	16.5 3.7
46	3 26.5	3 27.1	3 17.1	4.6 1.0	10.6 2.4	16.6 3.7
47	3 26.8	3 27.3	3 17.3	4.7 1.1	10.7 2.4	16.7 3.8
48	3 27.0	3 27.6	3 17.6	4.8 1.1	10.8 2.4	16.8 3.8
49	3 27.3	3 27.8	3 17.8	4.9 1.1	10.9 2.5	16.9 3.8
50	3 27.5	3 28.1	3 18.0	5.0 1.1	11.0 2.5	17.0 3.8
51	3 27.8	3 28.3	3 18.3	5.1 1.1	11.1 2.5	17.1 3.8
52	3 28.0	3 28.6	3 18.5	5.2 1.2	11.2 2.5	17.2 3.9
53	3 28.3	3 28.8	3 18.8	5.3 1.2	11.3 2.5	17.3 3.9
54	3 28.5	3 29.1	3 19.0	5.4 1.2	11.4 2.6	17.4 3.9
55	3 28.8	3 29.3	3 19.2	5.5 1.2	11.5 2.6	17.5 3.9
56	3 29.0	3 29.6	3 19.5	5.6 1.3	11.6 2.6	17.6 4.0
57	3 29.3	3 29.8	3 19.7	5.7 1.3	11.7 2.6	17.7 4.0
58	3 29.5	3 30.1	3 20.0	5.8 1.3	11.8 2.7	17.8 4.0
59	3 29.8	3 30.3	3 20.2	5.9 1.3	11.9 2.7	17.9 4.0
60	3 30.0	3 30.6	3 20.4	6.0 1.4	12.0 2.7	18.0 4.1

^m 14	SUN PLANETS	ARIES	MOON	ν or d	Corr ⁿ	ν or d	Corr ⁿ	ν or d	Corr ⁿ	^m 15	SUN PLANETS	ARIES	MOON	ν or d	Corr ⁿ	ν or d	Corr ⁿ	ν or d	Corr ⁿ
s	o	/	o	/	o	/	/	/	/	s	o	/	o	/	/	/	/	/	/
00	3 30.0	3 30.6	3 20.4	0.0	0.0	6.0	1.5	12.0	2.9	00	3 45.0	3 45.6	3 34.8	0.0	0.0	6.0	1.6	12.0	3.1
01	3 30.3	3 30.8	3 20.7	0.1	0.0	6.1	1.5	12.1	2.9	01	3 45.3	3 45.9	3 35.0	0.1	0.0	6.1	1.6	12.1	3.1
02	3 30.5	3 31.1	3 20.9	0.2	0.0	6.2	1.5	12.2	2.9	02	3 45.5	3 46.1	3 35.2	0.2	0.1	6.2	1.6	12.2	3.2
03	3 30.8	3 31.3	3 21.1	0.3	0.1	6.3	1.5	12.3	3.0	03	3 45.8	3 46.4	3 35.5	0.3	0.1	6.3	1.6	12.3	3.2
04	3 31.0	3 31.6	3 21.4	0.4	0.1	6.4	1.5	12.4	3.0	04	3 46.0	3 46.6	3 35.7	0.4	0.1	6.4	1.7	12.4	3.2
05	3 31.3	3 31.8	3 21.6	0.5	0.1	6.5	1.6	12.5	3.0	05	3 46.3	3 46.9	3 35.9	0.5	0.1	6.5	1.7	12.5	3.2
06	3 31.5	3 32.1	3 21.9	0.6	0.1	6.6	1.6	12.6	3.0	06	3 46.5	3 47.1	3 36.2	0.6	0.2	6.6	1.7	12.6	3.3
07	3 31.8	3 32.3	3 22.1	0.7	0.2	6.7	1.6	12.7	3.1	07	3 46.8	3 47.4	3 36.4	0.7	0.2	6.7	1.7	12.7	3.3
08	3 32.0	3 32.6	3 22.3	0.8	0.2	6.8	1.6	12.8	3.1	08	3 47.0	3 47.6	3 36.7	0.8	0.2	6.8	1.8	12.8	3.3
09	3 32.3	3 32.8	3 22.6	0.9	0.2	6.9	1.7	12.9	3.1	09	3 47.3	3 47.9	3 36.9	0.9	0.2	6.9	1.8	12.9	3.3
10	3 32.5	3 33.1	3 22.8	1.0	0.2	7.0	1.7	13.0	3.1	10	3 47.5	3 48.1	3 37.1	1.0	0.3	7.0	1.8	13.0	3.4
11	3 32.8	3 33.3	3 23.1	1.1	0.3	7.1	1.7	13.1	3.2	11	3 47.8	3 48.4	3 37.4	1.1	0.3	7.1	1.8	13.1	3.4
12	3 33.0	3 33.6	3 23.3	1.2	0.3	7.2	1.7	13.2	3.2	12	3 48.0	3 48.6	3 37.6	1.2	0.3	7.2	1.9	13.2	3.4
13	3 33.3	3 33.8	3 23.5	1.3	0.3	7.3	1.8	13.3	3.2	13	3 48.3	3 48.9	3 37.9	1.3	0.3	7.3	1.9	13.3	3.4
14	3 33.5	3 34.1	3 23.8	1.4	0.3	7.4	1.8	13.4	3.2	14	3 48.5	3 49.1	3 38.1	1.4	0.4	7.4	1.9	13.4	3.5
15	3 33.8	3 34.3	3 24.0	1.5	0.4	7.5	1.8	13.5	3.3	15	3 48.8	3 49.4	3 38.3	1.5	0.4	7.5	1.9	13.5	3.5
16	3 34.0	3 34.6	3 24.3	1.6	0.4	7.6	1.8	13.6	3.3	16	3 49.0	3 49.6	3 38.6	1.6	0.4	7.6	2.0	13.6	3.5
17	3 34.3	3 34.8	3 24.5	1.7	0.4	7.7	1.9	13.7	3.3	17	3 49.3	3 49.9	3 38.8	1.7	0.4	7.7	2.0	13.7	3.5
18	3 34.5	3 35.1	3 24.7	1.8	0.4	7.8	1.9	13.8	3.3	18	3 49.5	3 50.1	3 39.0	1.8	0.5	7.8	2.0	13.8	3.6
19	3 34.8	3 35.3	3 25.0	1.9	0.5	7.9	1.9	13.9	3.4	19	3 49.8	3 50.4	3 39.3	1.9	0.5	7.9	2.0	13.9	3.6
20	3 35.0	3 35.6	3 25.2	2.0	0.5	8.0	1.9	14.0	3.4	20	3 50.0	3 50.6	3 39.5	2.0	0.5	8.0	2.1	14.0	3.6
21	3 35.3	3 35.8	3 25.4	2.1	0.5	8.1	2.0	14.1	3.4	21	3 50.3	3 50.9	3 39.8	2.1	0.5	8.1	2.1	14.1	3.6
22	3 35.5	3 36.1	3 25.7	2.2	0.5	8.2	2.0	14.2	3.4	22	3 50.5	3 51.1	3 40.0	2.2	0.6	8.2	2.1	14.2	3.7
23	3 35.8	3 36.3	3 25.9	2.3	0.6	8.3	2.0	14.3	3.5	23	3 50.8	3 51.4	3 40.2	2.3	0.6	8.3	2.1	14.3	3.7
24	3 36.0	3 36.6	3 26.2	2.4	0.6	8.4	2.0	14.4	3.5	24	3 51.0	3 51.6	3 40.5	2.4	0.6	8.4	2.2	14.4	3.7
25	3 36.3	3 36.8	3 26.4	2.5	0.6	8.5	2.1	14.5	3.5	25	3 51.3	3 51.9	3 40.7	2.5	0.6	8.5	2.2	14.5	3.7
26	3 36.5	3 37.1	3 26.6	2.6	0.6	8.6	2.1	14.6	3.5	26	3 51.5	3 52.1	3 41.0	2.6	0.7	8.6	2.2	14.6	3.8
27	3 36.8	3 37.3	3 26.9	2.7	0.7	8.7	2.1	14.7	3.6	27	3 51.8	3 52.4	3 41.2	2.7	0.7	8.7	2.2	14.7	3.8
28	3 37.0	3 37.6	3 27.1	2.8	0.7	8.8	2.1	14.8	3.6	28	3 52.0	3 52.6	3 41.4	2.8	0.7	8.8	2.3	14.8	3.8
29	3 37.3	3 37.8	3 27.4	2.9	0.7	8.9	2.2	14.9	3.6	29	3 52.3	3 52.9	3 41.7	2.9	0.7	8.9	2.3	14.9	3.8
30	3 37.5	3 38.1	3 27.6	3.0	0.7	9.0	2.2	15.0	3.6	30	3 52.5	3 53.1	3 41.9	3.0	0.8	9.0	2.3	15.0	3.9
31	3 37.8	3 38.3	3 27.8	3.1	0.7	9.1	2.2	15.1	3.6	31	3 52.8	3 53.4	3 42.1	3.1	0.8	9.1	2.4	15.1	3.9
32	3 38.0	3 38.6	3 28.1	3.2	0.8	9.2	2.2	15.2	3.7	32	3 53.0	3 53.6	3 42.4	3.2	0.8	9.2	2.4	15.2	3.9
33	3 38.3	3 38.8	3 28.3	3.3	0.8	9.3	2.2	15.3	3.7	33	3 53.3	3 53.9	3 42.6	3.3	0.9	9.3	2.4	15.3	4.0
34	3 38.5	3 39.1	3 28.5	3.4	0.8	9.4	2.3	15.4	3.7	34	3 53.5	3 54.1	3 42.9	3.4	0.9	9.4	2.4	15.4	4.0
35	3 38.8	3 39.3	3 28.8	3.5	0.8	9.5	2.3	15.5	3.7	35	3 53.8	3 54.4	3 43.1	3.5	0.9	9.5	2.5	15.5	4.0
36	3 39.0	3 39.6	3 29.0	3.6	0.9	9.6	2.3	15.6	3.8	36	3 54.0	3 54.6	3 43.3	3.6	0.9	9.6	2.5	15.6	4.0
37	3 39.3	3 39.9	3 29.3	3.7	0.9	9.7	2.3	15.7	3.8	37	3 54.3	3 54.9	3 43.6	3.7	1.0	9.7	2.5	15.7	4.1
38	3 39.5	3 40.1	3 29.5	3.8	0.9	9.8	2.4	15.8	3.8	38	3 54.5	3 55.1	3 43.8	3.8	1.0	9.8	2.5	15.8	4.1
39	3 39.8	3 40.4	3 29.7	3.9	0.9	9.9	2.4	15.9	3.8	39	3 54.8	3 55.4	3 44.1	3.9	1.0	9.9	2.6	15.9	4.1
40	3 40.0	3 40.6	3 30.0	4.0	1.0	10.0	2.4	16.0	3.9	40	3 55.0	3 55.6	3 44.3	4.0	1.0	10.0	2.6	16.0	4.1
41	3 40.3	3 40.9	3 30.2	4.1	1.0	10.1	2.4	16.1	3.9	41	3 55.3	3 55.9	3 44.5	4.1	1.1	10.1	2.6	16.1	4.2
42	3 40.5	3 41.1	3 30.5	4.2	1.0	10.2	2.5	16.2	3.9	42	3 55.5	3 56.1	3 44.8	4.2	1.1	10.2	2.6	16.2	4.2
43	3 40.8	3 41.4	3 30.7	4.3	1.0	10.3	2.5	16.3	3.9	43	3 55.8	3 56.4	3 45.0	4.3	1.1	10.3	2.7	16.3	4.2
44	3 41.0	3 41.6	3 30.9	4.4	1.1	10.4	2.5	16.4	4.0	44	3 56.0	3 56.6	3 45.2	4.4	1.1	10.4	2.7	16.4	4.2
45	3 41.3	3 41.9	3 31.2	4.5	1.1	10.5	2.5	16.5	4.0	45	3 56.3	3 56.9	3 45.5	4.5	1.2	10.5	2.7	16.5	4.3
46	3 41.5	3 42.1	3 31.4	4.6	1.1	10.6	2.6	16.6	4.0	46	3 56.5	3 57.1	3 45.7	4.6	1.2	10.6	2.7	16.6	4.3
47	3 41.8	3 42.4	3 31.6	4.7	1.1	10.7	2.6	16.7	4.0	47	3 56.8	3 57.4	3 46.0	4.7	1.2	10.7	2.8	16.7	4.3
48	3 42.0	3 42.6	3 31.9	4.8	1.2	10.8	2.6	16.8	4.1	48	3 57.0	3 57.6	3 46.2	4.8	1.2	10.8	2.8	16.8	4.3
49	3 42.3	3 42.9	3 32.1	4.9	1.2	10.9	2.6	16.9	4.1	49	3 57.3	3 57.9	3 46.4	4.9	1.3	10.9	2.8	16.9	4.4
50	3 42.5	3 43.1	3 32.4	5.0	1.2	11.0	2.7	17.0	4.1	50	3 57.5	3 58.2	3 46.7	5.0	1.3	11.0	2.8	17.0	4.4
51	3 42.8	3 43.4	3 32.6	5.1	1.2	11.1	2.7	17.1	4.1	51	3 57.8	3 58.4	3 46.9	5.1	1.3	11.1	2.9	17.1	4.4
52	3 43.0	3 43.6	3 32.8	5.2	1.3	11.2	2.7	17.2	4.2	52	3 58.0	3 58.7	3 47.2	5.2	1.3	11.2	2.9	17.2	4.4
53	3 43.3	3 43.9	3 33.1	5.3	1.3	11.3	2.7	17.3	4.2	53	3 58.3	3 58.9	3 47.4	5.3	1.4	11.3	2.9	17.3	4.5
54	3 43.5	3 44.1	3 33.3	5.4	1.3	11.4	2.8	17.4	4.2	54	3 58.5	3 59.2	3 47.6	5.4	1.4	11.4	2.9	17.4	4.5
55	3 43.8	3 44.4	3 33.6	5.5	1.3	11.5	2.8	17.5	4.2	55	3 58.8	3 59.4	3 47.9	5.5	1.4	11.5	3.0	17.5	4.5
56	3 44.0	3 44.6	3 33.8	5.6	1.4	11.6	2.8	17.6	4.3	56	3 59.0	3 59.7	3 48.1	5.6	1.4	11.6	3.0	17.6	4.5
57	3 44.3	3 44.9	3 34.0	5.7	1.4	11.7	2.8	17.7	4.3	57	3 59.3	3 59.9	3 48.4	5.7	1.5	11.7	3.0	17.7	4.6
58	3 44.5	3 45.1	3 34.3	5.8	1.4	11.8	2.9	17.8	4.3	58	3 59.5	4 00.2	3 48.6	5.8	1.5	11.8	3.0	17.8	4.6
59	3 44.8	3 45.4	3 34.5	5.9	1.4	11.9	2.9	17.9	4.3	59	3 59.8	4 00.4	3 48.8	5.9	1.5	11.9	3.1	17.9	4.6
60	3 45.0	3 45.6	3 34.8	6.0	1.5	12.0	2.9	18.0	4.4	60	4 00.0	4 00.7	3 49.1	6.0	1.6	12.0	3.1	18.0	4.7

16 ^m	SUN PLANETS	ARIES	MOON	ϑ or d	Corr ⁿ	ϑ or d	Corr ⁿ	ϑ or d	Corr ⁿ	17 ^m	SUN PLANETS	ARIES	MOON	ϑ or d	Corr ⁿ	ϑ or d	Corr ⁿ	ϑ or d	Corr ⁿ
00	4 00.0	4 00.7	3 49.1	0.0	0.0	6.0	1.7	12.0	3.3	00	4 15.0	4 15.7	4 03.4	0.0	0.0	6.0	1.8	12.0	3.5
01	4 00.3	4 00.9	3 49.3	0.1	0.0	6.1	1.7	12.1	3.3	01	4 15.3	4 15.9	4 03.6	0.1	0.0	6.1	1.8	12.1	3.5
02	4 00.5	4 01.2	3 49.5	0.2	0.1	6.2	1.7	12.2	3.4	02	4 15.5	4 16.2	4 03.9	0.2	0.1	6.2	1.8	12.2	3.6
03	4 00.8	4 01.4	3 49.8	0.3	0.1	6.3	1.7	12.3	3.4	03	4 15.8	4 16.5	4 04.1	0.3	0.1	6.3	1.8	12.3	3.6
04	4 01.0	4 01.7	3 50.0	0.4	0.1	6.4	1.8	12.4	3.4	04	4 16.0	4 16.7	4 04.3	0.4	0.1	6.4	1.9	12.4	3.6
05	4 01.3	4 01.9	3 50.3	0.5	0.1	6.5	1.8	12.5	3.4	05	4 16.3	4 17.0	4 04.6	0.5	0.1	6.5	1.9	12.5	3.6
06	4 01.5	4 02.2	3 50.5	0.6	0.2	6.6	1.8	12.6	3.5	06	4 16.5	4 17.2	4 04.8	0.6	0.2	6.6	1.9	12.6	3.7
07	4 01.8	4 02.4	3 50.7	0.7	0.2	6.7	1.8	12.7	3.5	07	4 16.8	4 17.5	4 05.1	0.7	0.2	6.7	2.0	12.7	3.7
08	4 02.0	4 02.7	3 51.0	0.8	0.2	6.8	1.9	12.8	3.5	08	4 17.0	4 17.7	4 05.3	0.8	0.2	6.8	2.0	12.8	3.7
09	4 02.3	4 02.9	3 51.2	0.9	0.2	6.9	1.9	12.9	3.5	09	4 17.3	4 18.0	4 05.5	0.9	0.3	6.9	2.0	12.9	3.8
10	4 02.5	4 03.2	3 51.5	1.0	0.3	7.0	1.9	13.0	3.6	10	4 17.5	4 18.2	4 05.8	1.0	0.3	7.0	2.0	13.0	3.8
11	4 02.8	4 03.4	3 51.7	1.1	0.3	7.1	2.0	13.1	3.6	11	4 17.8	4 18.5	4 06.0	1.1	0.3	7.1	2.1	13.1	3.8
12	4 03.0	4 03.7	3 51.9	1.2	0.3	7.2	2.0	13.2	3.6	12	4 18.0	4 18.7	4 06.2	1.2	0.4	7.2	2.1	13.2	3.9
13	4 03.3	4 03.9	3 52.2	1.3	0.4	7.3	2.0	13.3	3.7	13	4 18.3	4 19.0	4 06.5	1.3	0.4	7.3	2.1	13.3	3.9
14	4 03.5	4 04.2	3 52.4	1.4	0.4	7.4	2.0	13.4	3.7	14	4 18.5	4 19.2	4 06.7	1.4	0.4	7.4	2.2	13.4	3.9
15	4 03.8	4 04.4	3 52.6	1.5	0.4	7.5	2.1	13.5	3.7	15	4 18.8	4 19.5	4 07.0	1.5	0.4	7.5	2.2	13.5	3.9
16	4 04.0	4 04.7	3 52.9	1.6	0.4	7.6	2.1	13.6	3.7	16	4 19.0	4 19.7	4 07.2	1.6	0.5	7.6	2.2	13.6	4.0
17	4 04.3	4 04.9	3 53.1	1.7	0.5	7.7	2.1	13.7	3.8	17	4 19.3	4 20.0	4 07.4	1.7	0.5	7.7	2.2	13.7	4.0
18	4 04.5	4 05.2	3 53.4	1.8	0.5	7.8	2.1	13.8	3.8	18	4 19.5	4 20.2	4 07.7	1.8	0.5	7.8	2.3	13.8	4.0
19	4 04.8	4 05.4	3 53.6	1.9	0.5	7.9	2.2	13.9	3.8	19	4 19.8	4 20.5	4 07.9	1.9	0.6	7.9	2.3	13.9	4.1
20	4 05.0	4 05.7	3 53.8	2.0	0.6	8.0	2.2	14.0	3.9	20	4 20.0	4 20.7	4 08.2	2.0	0.6	8.0	2.3	14.0	4.1
21	4 05.3	4 05.9	3 54.1	2.1	0.6	8.1	2.2	14.1	3.9	21	4 20.3	4 21.0	4 08.4	2.1	0.6	8.1	2.4	14.1	4.1
22	4 05.5	4 06.2	3 54.3	2.2	0.6	8.2	2.3	14.2	3.9	22	4 20.5	4 21.2	4 08.6	2.2	0.6	8.2	2.4	14.2	4.1
23	4 05.8	4 06.4	3 54.6	2.3	0.6	8.3	2.3	14.3	3.9	23	4 20.8	4 21.5	4 08.9	2.3	0.7	8.3	2.4	14.3	4.2
24	4 06.0	4 06.7	3 54.8	2.4	0.7	8.4	2.3	14.4	4.0	24	4 21.0	4 21.7	4 09.1	2.4	0.7	8.4	2.5	14.4	4.2
25	4 06.3	4 06.9	3 55.0	2.5	0.7	8.5	2.3	14.5	4.0	25	4 21.3	4 22.0	4 09.3	2.5	0.7	8.5	2.5	14.5	4.2
26	4 06.5	4 07.2	3 55.3	2.6	0.7	8.6	2.4	14.6	4.0	26	4 21.5	4 22.2	4 09.6	2.6	0.8	8.6	2.5	14.6	4.3
27	4 06.8	4 07.4	3 55.5	2.7	0.7	8.7	2.4	14.7	4.0	27	4 21.8	4 22.5	4 09.8	2.7	0.8	8.7	2.5	14.7	4.3
28	4 07.0	4 07.7	3 55.7	2.8	0.8	8.8	2.4	14.8	4.1	28	4 22.0	4 22.7	4 10.1	2.8	0.8	8.8	2.6	14.8	4.3
29	4 07.3	4 07.9	3 56.0	2.9	0.8	8.9	2.4	14.9	4.1	29	4 22.3	4 23.0	4 10.3	2.9	0.8	8.9	2.6	14.9	4.3
30	4 07.5	4 08.2	3 56.2	3.0	0.8	9.0	2.5	15.0	4.1	30	4 22.5	4 23.2	4 10.5	3.0	0.9	9.0	2.6	15.0	4.4
31	4 07.8	4 08.4	3 56.5	3.1	0.9	9.1	2.5	15.1	4.2	31	4 22.8	4 23.5	4 10.8	3.1	0.9	9.1	2.7	15.1	4.4
32	4 08.0	4 08.7	3 56.7	3.2	0.9	9.2	2.5	15.2	4.2	32	4 23.0	4 23.7	4 11.0	3.2	0.9	9.2	2.7	15.2	4.4
33	4 08.3	4 08.9	3 56.9	3.3	0.9	9.3	2.6	15.3	4.2	33	4 23.3	4 24.0	4 11.3	3.3	1.0	9.3	2.7	15.3	4.5
34	4 08.5	4 09.2	3 57.2	3.4	0.9	9.4	2.6	15.4	4.2	34	4 23.5	4 24.2	4 11.5	3.4	1.0	9.4	2.7	15.4	4.5
35	4 08.8	4 09.4	3 57.4	3.5	1.0	9.5	2.6	15.5	4.3	35	4 23.8	4 24.5	4 11.7	3.5	1.0	9.5	2.8	15.5	4.5
36	4 09.0	4 09.7	3 57.7	3.6	1.0	9.6	2.6	15.6	4.3	36	4 24.0	4 24.7	4 12.0	3.6	1.1	9.6	2.8	15.6	4.6
37	4 09.3	4 09.9	3 57.9	3.7	1.0	9.7	2.7	15.7	4.3	37	4 24.3	4 25.0	4 12.2	3.7	1.1	9.7	2.8	15.7	4.6
38	4 09.5	4 10.2	3 58.1	3.8	1.0	9.8	2.7	15.8	4.3	38	4 24.5	4 25.2	4 12.5	3.8	1.1	9.8	2.9	15.8	4.6
39	4 09.8	4 10.4	3 58.4	3.9	1.1	9.9	2.7	15.9	4.4	39	4 24.8	4 25.5	4 12.7	3.9	1.1	9.9	2.9	15.9	4.6
40	4 10.0	4 10.7	3 58.6	4.0	1.1	10.0	2.8	16.0	4.4	40	4 25.0	4 25.7	4 12.9	4.0	1.2	10.0	2.9	16.0	4.7
41	4 10.3	4 10.9	3 58.8	4.1	1.1	10.1	2.8	16.1	4.4	41	4 25.3	4 26.0	4 13.2	4.1	1.2	10.1	2.9	16.1	4.7
42	4 10.5	4 11.2	3 59.1	4.2	1.2	10.2	2.8	16.2	4.5	42	4 25.5	4 26.2	4 13.4	4.2	1.2	10.2	3.0	16.2	4.7
43	4 10.8	4 11.4	3 59.3	4.3	1.2	10.3	2.8	16.3	4.5	43	4 25.8	4 26.5	4 13.6	4.3	1.3	10.3	3.0	16.3	4.8
44	4 11.0	4 11.7	3 59.6	4.4	1.2	10.4	2.9	16.4	4.5	44	4 26.0	4 26.7	4 13.9	4.4	1.3	10.4	3.0	16.4	4.8
45	4 11.3	4 11.9	3 59.8	4.5	1.2	10.5	2.9	16.5	4.5	45	4 26.3	4 27.0	4 14.1	4.5	1.3	10.5	3.1	16.5	4.8
46	4 11.5	4 12.2	4 00.0	4.6	1.3	10.6	2.9	16.6	4.6	46	4 26.5	4 27.2	4 14.4	4.6	1.3	10.6	3.1	16.6	4.8
47	4 11.8	4 12.4	4 00.3	4.7	1.3	10.7	2.9	16.7	4.6	47	4 26.8	4 27.5	4 14.6	4.7	1.4	10.7	3.1	16.7	4.9
48	4 12.0	4 12.7	4 00.5	4.8	1.3	10.8	3.0	16.8	4.6	48	4 27.0	4 27.7	4 14.8	4.8	1.4	10.8	3.2	16.8	4.9
49	4 12.3	4 12.9	4 00.8	4.9	1.3	10.9	3.0	16.9	4.6	49	4 27.3	4 28.0	4 15.1	4.9	1.4	10.9	3.2	16.9	4.9
50	4 12.5	4 13.2	4 01.0	5.0	1.4	11.0	3.0	17.0	4.7	50	4 27.5	4 28.2	4 15.3	5.0	1.5	11.0	3.2	17.0	5.0
51	4 12.8	4 13.4	4 01.2	5.1	1.4	11.1	3.1	17.1	4.7	51	4 27.8	4 28.5	4 15.6	5.1	1.5	11.1	3.2	17.1	5.0
52	4 13.0	4 13.7	4 01.5	5.2	1.4	11.2	3.1	17.2	4.7	52	4 28.0	4 28.7	4 15.8	5.2	1.5	11.2	3.3	17.2	5.0
53	4 13.3	4 13.9	4 01.7	5.3	1.5	11.3	3.1	17.3	4.8	53	4 28.3	4 29.0	4 16.0	5.3	1.5	11.3	3.3	17.3	5.0
54	4 13.5	4 14.2	4 02.0	5.4	1.5	11.4	3.1	17.4	4.8	54	4 28.5	4 29.2	4 16.3	5.4	1.6	11.4	3.3	17.4	5.1
55	4 13.8	4 14.4	4 02.2	5.5	1.5	11.5	3.2	17.5	4.8	55	4 28.8	4 29.5	4 16.5	5.5	1.6	11.5	3.4	17.5	5.1
56	4 14.0	4 14.7	4 02.4	5.6	1.5	11.6	3.2	17.6	4.8	56	4 29.0	4 29.7	4 16.7	5.6	1.6	11.6	3.4	17.6	5.1
57	4 14.3	4 14.9	4 02.7	5.7	1.6	11.7	3.2	17.7	4.9	57	4 29.3	4 30.0	4 17.0	5.7	1.7	11.7	3.4	17.7	5.2
58	4 14.5	4 15.2	4 02.9	5.8	1.6	11.8	3.2	17.8	4.9	58	4 29.5	4 30.2	4 17.2	5.8	1.7	11.8	3.4	17.8	5.2
59	4 14.8	4 15.4	4 03.1	5.9	1.6	11.9	3.3	17.9	4.9	59	4 29.8	4 30.5	4 17.5	5.9	1.7	11.9	3.5	17.9	5.2
60	4 15.0	4 15.7	4 03.4	6.0	1.7	12.0	3.3	18.0	5.0	60	4 30.0	4 30.7	4 17.7	6.0	1.8	12.0	3.5	18.0	5.3

^m 18	SUN PLANETS	ARIES	MOON	$\frac{v}{d}$ or Corr ⁿ $\frac{d}{d}$	$\frac{v}{d}$ or Corr ⁿ $\frac{d}{d}$	$\frac{v}{d}$ or Corr ⁿ $\frac{d}{d}$
00	4 30.0	4 30.7	4 17.7	0.0 0.0	6.0 1.9	12.0 3.7
01	4 30.3	4 31.0	4 17.9	0.1 0.0	6.1 1.9	12.1 3.7
02	4 30.5	4 31.2	4 18.2	0.2 0.1	6.2 1.9	12.2 3.8
03	4 30.8	4 31.5	4 18.4	0.3 0.1	6.3 1.9	12.3 3.8
04	4 31.0	4 31.7	4 18.7	0.4 0.1	6.4 2.0	12.4 3.8
05	4 31.3	4 32.0	4 18.9	0.5 0.2	6.5 2.0	12.5 3.9
06	4 31.5	4 32.2	4 19.1	0.6 0.2	6.6 2.0	12.6 3.9
07	4 31.8	4 32.5	4 19.4	0.7 0.2	6.7 2.1	12.7 3.9
08	4 32.0	4 32.7	4 19.6	0.8 0.2	6.8 2.1	12.8 3.9
09	4 32.3	4 33.0	4 19.8	0.9 0.3	6.9 2.1	12.9 4.0
10	4 32.5	4 33.2	4 20.1	1.0 0.3	7.0 2.2	13.0 4.0
11	4 32.8	4 33.5	4 20.3	1.1 0.3	7.1 2.2	13.1 4.0
12	4 33.0	4 33.7	4 20.6	1.2 0.4	7.2 2.2	13.2 4.1
13	4 33.3	4 34.0	4 20.8	1.3 0.4	7.3 2.3	13.3 4.1
14	4 33.5	4 34.2	4 21.0	1.4 0.4	7.4 2.3	13.4 4.1
15	4 33.8	4 34.5	4 21.3	1.5 0.5	7.5 2.3	13.5 4.2
16	4 34.0	4 34.8	4 21.5	1.6 0.5	7.6 2.3	13.6 4.2
17	4 34.3	4 35.0	4 21.8	1.7 0.5	7.7 2.4	13.7 4.2
18	4 34.5	4 35.3	4 22.0	1.8 0.6	7.8 2.4	13.8 4.3
19	4 34.8	4 35.5	4 22.2	1.9 0.6	7.9 2.4	13.9 4.3
20	4 35.0	4 35.8	4 22.5	2.0 0.6	8.0 2.5	14.0 4.3
21	4 35.3	4 36.0	4 22.7	2.1 0.6	8.1 2.5	14.1 4.3
22	4 35.5	4 36.3	4 22.9	2.2 0.7	8.2 2.5	14.2 4.4
23	4 35.8	4 36.5	4 23.2	2.3 0.7	8.3 2.6	14.3 4.4
24	4 36.0	4 36.8	4 23.4	2.4 0.7	8.4 2.6	14.4 4.4
25	4 36.3	4 37.0	4 23.7	2.5 0.8	8.5 2.6	14.5 4.5
26	4 36.5	4 37.3	4 23.9	2.6 0.8	8.6 2.7	14.6 4.5
27	4 36.8	4 37.5	4 24.1	2.7 0.8	8.7 2.7	14.7 4.5
28	4 37.0	4 37.8	4 24.4	2.8 0.9	8.8 2.7	14.8 4.6
29	4 37.3	4 38.0	4 24.6	2.9 0.9	8.9 2.7	14.9 4.6
30	4 37.5	4 38.3	4 24.9	3.0 0.9	9.0 2.8	15.0 4.6
31	4 37.8	4 38.5	4 25.1	3.1 1.0	9.1 2.8	15.1 4.7
32	4 38.0	4 38.8	4 25.3	3.2 1.0	9.2 2.8	15.2 4.7
33	4 38.3	4 39.0	4 25.6	3.3 1.0	9.3 2.9	15.3 4.7
34	4 38.5	4 39.3	4 25.8	3.4 1.0	9.4 2.9	15.4 4.7
35	4 38.8	4 39.5	4 26.1	3.5 1.1	9.5 2.9	15.5 4.8
36	4 39.0	4 39.8	4 26.3	3.6 1.1	9.6 3.0	15.6 4.8
37	4 39.3	4 40.0	4 26.5	3.7 1.1	9.7 3.0	15.7 4.8
38	4 39.5	4 40.3	4 26.8	3.8 1.2	9.8 3.0	15.8 4.9
39	4 39.8	4 40.5	4 27.0	3.9 1.2	9.9 3.1	15.9 4.9
40	4 40.0	4 40.8	4 27.2	4.0 1.2	10.0 3.1	16.0 4.9
41	4 40.3	4 41.0	4 27.5	4.1 1.3	10.1 3.1	16.1 5.0
42	4 40.5	4 41.3	4 27.7	4.2 1.3	10.2 3.1	16.2 5.0
43	4 40.8	4 41.5	4 28.0	4.3 1.3	10.3 3.2	16.3 5.0
44	4 41.0	4 41.8	4 28.2	4.4 1.4	10.4 3.2	16.4 5.1
45	4 41.3	4 42.0	4 28.4	4.5 1.4	10.5 3.2	16.5 5.1
46	4 41.5	4 42.3	4 28.7	4.6 1.4	10.6 3.3	16.6 5.1
47	4 41.8	4 42.5	4 28.9	4.7 1.4	10.7 3.3	16.7 5.1
48	4 42.0	4 42.8	4 29.2	4.8 1.5	10.8 3.3	16.8 5.2
49	4 42.3	4 43.0	4 29.4	4.9 1.5	10.9 3.4	16.9 5.2
50	4 42.5	4 43.3	4 29.6	5.0 1.5	11.0 3.4	17.0 5.2
51	4 42.8	4 43.5	4 29.9	5.1 1.6	11.1 3.4	17.1 5.3
52	4 43.0	4 43.8	4 30.1	5.2 1.6	11.2 3.5	17.2 5.3
53	4 43.3	4 44.0	4 30.3	5.3 1.6	11.3 3.5	17.3 5.3
54	4 43.5	4 44.3	4 30.6	5.4 1.7	11.4 3.5	17.4 5.4
55	4 43.8	4 44.5	4 30.8	5.5 1.7	11.5 3.5	17.5 5.4
56	4 44.0	4 44.8	4 31.1	5.6 1.7	11.6 3.6	17.6 5.4
57	4 44.3	4 45.0	4 31.3	5.7 1.8	11.7 3.6	17.7 5.5
58	4 44.5	4 45.3	4 31.5	5.8 1.8	11.8 3.6	17.8 5.5
59	4 44.8	4 45.5	4 31.8	5.9 1.8	11.9 3.7	17.9 5.5
60	4 45.0	4 45.8	4 32.0	6.0 1.9	12.0 3.7	18.0 5.6

^m 19	SUN PLANETS	ARIES	MOON	$\frac{v}{d}$ or Corr ⁿ $\frac{d}{d}$	$\frac{v}{d}$ or Corr ⁿ $\frac{d}{d}$	$\frac{v}{d}$ or Corr ⁿ $\frac{d}{d}$
00	4 45.0	4 45.8	4 32.0	0.0 0.0	6.0 2.0	12.0 3.9
01	4 45.3	4 46.0	4 32.3	0.1 0.0	6.1 2.0	12.1 3.9
02	4 45.5	4 46.3	4 32.5	0.2 0.1	6.2 2.0	12.2 4.0
03	4 45.8	4 46.5	4 32.7	0.3 0.1	6.3 2.0	12.3 4.0
04	4 46.0	4 46.8	4 33.0	0.4 0.1	6.4 2.1	12.4 4.0
05	4 46.3	4 47.0	4 33.2	0.5 0.2	6.5 2.1	12.5 4.1
06	4 46.5	4 47.3	4 33.4	0.6 0.2	6.6 2.1	12.6 4.1
07	4 46.8	4 47.5	4 33.7	0.7 0.2	6.7 2.2	12.7 4.1
08	4 47.0	4 47.8	4 33.9	0.8 0.3	6.8 2.2	12.8 4.2
09	4 47.3	4 48.0	4 34.2	0.9 0.3	6.9 2.2	12.9 4.2
10	4 47.5	4 48.3	4 34.4	1.0 0.3	7.0 2.3	13.0 4.2
11	4 47.8	4 48.5	4 34.6	1.1 0.4	7.1 2.3	13.1 4.3
12	4 48.0	4 48.8	4 34.9	1.2 0.4	7.2 2.3	13.2 4.3
13	4 48.3	4 49.0	4 35.1	1.3 0.4	7.3 2.4	13.3 4.3
14	4 48.5	4 49.3	4 35.4	1.4 0.5	7.4 2.4	13.4 4.4
15	4 48.8	4 49.5	4 35.6	1.5 0.5	7.5 2.4	13.5 4.4
16	4 49.0	4 49.8	4 35.8	1.6 0.5	7.6 2.5	13.6 4.4
17	4 49.3	4 50.0	4 36.1	1.7 0.6	7.7 2.5	13.7 4.5
18	4 49.5	4 50.3	4 36.3	1.8 0.6	7.8 2.5	13.8 4.5
19	4 49.8	4 50.5	4 36.6	1.9 0.6	7.9 2.6	13.9 4.5
20	4 50.0	4 50.8	4 36.8	2.0 0.7	8.0 2.6	14.0 4.6
21	4 50.3	4 51.0	4 37.0	2.1 0.7	8.1 2.6	14.1 4.6
22	4 50.5	4 51.3	4 37.3	2.2 0.7	8.2 2.7	14.2 4.6
23	4 50.8	4 51.5	4 37.5	2.3 0.7	8.3 2.7	14.3 4.6
24	4 51.0	4 51.8	4 37.7	2.4 0.8	8.4 2.7	14.4 4.7
25	4 51.3	4 52.0	4 38.0	2.5 0.8	8.5 2.8	14.5 4.7
26	4 51.5	4 52.3	4 38.2	2.6 0.8	8.6 2.8	14.6 4.7
27	4 51.8	4 52.5	4 38.5	2.7 0.9	8.7 2.8	14.7 4.8
28	4 52.0	4 52.8	4 38.7	2.8 0.9	8.8 2.9	14.8 4.8
29	4 52.3	4 53.1	4 38.9	2.9 0.9	8.9 2.9	14.9 4.8
30	4 52.5	4 53.3	4 39.2	3.0 1.0	9.0 2.9	15.0 4.9
31	4 52.8	4 53.6	4 39.4	3.1 1.0	9.1 3.0	15.1 4.9
32	4 53.0	4 53.8	4 39.7	3.2 1.0	9.2 3.0	15.2 4.9
33	4 53.3	4 54.1	4 39.9	3.3 1.1	9.3 3.0	15.3 5.0
34	4 53.5	4 54.3	4 40.1	3.4 1.1	9.4 3.1	15.4 5.0
35	4 53.8	4 54.6	4 40.4	3.5 1.1	9.5 3.1	15.5 5.0
36	4 54.0	4 54.8	4 40.6	3.6 1.2	9.6 3.1	15.6 5.1
37	4 54.3	4 55.1	4 40.8	3.7 1.2	9.7 3.2	15.7 5.1
38	4 54.5	4 55.3	4 41.1	3.8 1.2	9.8 3.2	15.8 5.1
39	4 54.8	4 55.6	4 41.3	3.9 1.3	9.9 3.2	15.9 5.2
40	4 55.0	4 55.8	4 41.6	4.0 1.3	10.0 3.3	16.0 5.2
41	4 55.3	4 56.1	4 41.8	4.1 1.3	10.1 3.3	16.1 5.2
42	4 55.5	4 56.3	4 42.0	4.2 1.4	10.2 3.3	16.2 5.3
43	4 55.8	4 56.6	4 42.3	4.3 1.4	10.3 3.3	16.3 5.3
44	4 56.0	4 56.8	4 42.5	4.4 1.4	10.4 3.4	16.4 5.3
45	4 56.3	4 57.1	4 42.8	4.5 1.5	10.5 3.4	16.5 5.4
46	4 56.5	4 57.3	4 43.0	4.6 1.5	10.6 3.4	16.6 5.4
47	4 56.8	4 57.6	4 43.2	4.7 1.5	10.7 3.5	16.7 5.4
48	4 57.0	4 57.8	4 43.5	4.8 1.6	10.8 3.5	16.8 5.5
49	4 57.3	4 58.1	4 43.7	4.9 1.6	10.9 3.5	16.9 5.5
50	4 57.5	4 58.3	4 43.9	5.0 1.6	11.0 3.6	17.0 5.5
51	4 57.8	4 58.6	4 44.2	5.1 1.7	11.1 3.6	17.1 5.6
52	4 58.0	4 58.8	4 44.4	5.2 1.7	11.2 3.6	17.2 5.6
53	4 58.3	4 59.1	4 44.7	5.3 1.7	11.3 3.7	17.3 5.6
54	4 58.5	4 59.3	4 44.9	5.4 1.8	11.4 3.7	17.4 5.7
55	4 58.8	4 59.6	4 45.1	5.5 1.8	11.5 3.7	17.5 5.7
56	4 59.0	4 59.8	4 45.4	5.6 1.8	11.6 3.8	17.6 5.7
57	4 59.3	5 00.1	4 45.6	5.7 1.9	11.7 3.8	17.7 5.8
58	4 59.5	5 00.3	4 45.9	5.8 1.9	11.8 3.8	17.8 5.8
59	4 59.8	5 00.6	4 46.1	5.9 1.9	11.9 3.9	17.9 5.8
60	5 00.0	5 00.8	4 46.3	6.0 2.0	12.0 3.9	18.0 5.9

20 ^m	SUN PLANETS	ARIES	MOON	ϑ or d	Corr ⁿ	ϑ or d	Corr ⁿ	ϑ or d	Corr ⁿ
s	o /	o /	o /	/ /	/ /	/ /	/ /	/ /	/ /
00	5 00.0	5 00.8	4 46.3	0.0	0.0	6.0	2.1	12.0	4.1
01	5 00.3	5 01.1	4 46.6	0.1	0.0	6.1	2.1	12.1	4.1
02	5 00.5	5 01.3	4 46.8	0.2	0.1	6.2	2.1	12.2	4.2
03	5 00.8	5 01.6	4 47.0	0.3	0.1	6.3	2.2	12.3	4.2
04	5 01.0	5 01.8	4 47.3	0.4	0.1	6.4	2.2	12.4	4.2
05	5 01.3	5 02.1	4 47.5	0.5	0.2	6.5	2.2	12.5	4.3
06	5 01.5	5 02.3	4 47.8	0.6	0.2	6.6	2.3	12.6	4.3
07	5 01.8	5 02.6	4 48.0	0.7	0.2	6.7	2.3	12.7	4.3
08	5 02.0	5 02.8	4 48.2	0.8	0.3	6.8	2.3	12.8	4.4
09	5 02.3	5 03.1	4 48.5	0.9	0.3	6.9	2.4	12.9	4.4
10	5 02.5	5 03.3	4 48.7	1.0	0.3	7.0	2.4	13.0	4.4
11	5 02.8	5 03.6	4 49.0	1.1	0.4	7.1	2.4	13.1	4.5
12	5 03.0	5 03.8	4 49.2	1.2	0.4	7.2	2.5	13.2	4.5
13	5 03.3	5 04.1	4 49.4	1.3	0.4	7.3	2.5	13.3	4.5
14	5 03.5	5 04.3	4 49.7	1.4	0.5	7.4	2.5	13.4	4.6
15	5 03.8	5 04.6	4 49.9	1.5	0.5	7.5	2.6	13.5	4.6
16	5 04.0	5 04.8	4 50.2	1.6	0.5	7.6	2.6	13.6	4.6
17	5 04.3	5 05.1	4 50.4	1.7	0.6	7.7	2.6	13.7	4.7
18	5 04.5	5 05.3	4 50.6	1.8	0.6	7.8	2.7	13.8	4.7
19	5 04.8	5 05.6	4 50.9	1.9	0.6	7.9	2.7	13.9	4.7
20	5 05.0	5 05.8	4 51.1	2.0	0.7	8.0	2.7	14.0	4.8
21	5 05.3	5 06.1	4 51.3	2.1	0.7	8.1	2.8	14.1	4.8
22	5 05.5	5 06.3	4 51.6	2.2	0.8	8.2	2.8	14.2	4.9
23	5 05.8	5 06.6	4 51.8	2.3	0.8	8.3	2.8	14.3	4.9
24	5 06.0	5 06.8	4 52.1	2.4	0.8	8.4	2.9	14.4	4.9
25	5 06.3	5 07.1	4 52.3	2.5	0.9	8.5	2.9	14.5	5.0
26	5 06.5	5 07.3	4 52.5	2.6	0.9	8.6	2.9	14.6	5.0
27	5 06.8	5 07.6	4 52.8	2.7	0.9	8.7	3.0	14.7	5.0
28	5 07.0	5 07.8	4 53.0	2.8	1.0	8.8	3.0	14.8	5.1
29	5 07.3	5 08.1	4 53.3	2.9	1.0	8.9	3.0	14.9	5.1
30	5 07.5	5 08.3	4 53.5	3.0	1.0	9.0	3.1	15.0	5.1
31	5 07.8	5 08.6	4 53.7	3.1	1.1	9.1	3.1	15.1	5.2
32	5 08.0	5 08.8	4 54.0	3.2	1.1	9.2	3.1	15.2	5.2
33	5 08.3	5 09.1	4 54.2	3.3	1.1	9.3	3.2	15.3	5.2
34	5 08.5	5 09.3	4 54.4	3.4	1.2	9.4	3.2	15.4	5.3
35	5 08.8	5 09.6	4 54.7	3.5	1.2	9.5	3.2	15.5	5.3
36	5 09.0	5 09.8	4 54.9	3.6	1.2	9.6	3.3	15.6	5.3
37	5 09.3	5 10.1	4 55.2	3.7	1.3	9.7	3.3	15.7	5.4
38	5 09.5	5 10.3	4 55.4	3.8	1.3	9.8	3.3	15.8	5.4
39	5 09.8	5 10.6	4 55.6	3.9	1.3	9.9	3.4	15.9	5.4
40	5 10.0	5 10.8	4 55.9	4.0	1.4	10.0	3.4	16.0	5.5
41	5 10.3	5 11.1	4 56.1	4.1	1.4	10.1	3.5	16.1	5.5
42	5 10.5	5 11.4	4 56.4	4.2	1.4	10.2	3.5	16.2	5.5
43	5 10.8	5 11.6	4 56.6	4.3	1.5	10.3	3.5	16.3	5.6
44	5 11.0	5 11.9	4 56.8	4.4	1.5	10.4	3.6	16.4	5.6
45	5 11.3	5 12.1	4 57.1	4.5	1.5	10.5	3.6	16.5	5.6
46	5 11.5	5 12.4	4 57.3	4.6	1.6	10.6	3.6	16.6	5.7
47	5 11.8	5 12.6	4 57.5	4.7	1.6	10.7	3.7	16.7	5.7
48	5 12.0	5 12.9	4 57.8	4.8	1.6	10.8	3.7	16.8	5.7
49	5 12.3	5 13.1	4 58.0	4.9	1.7	10.9	3.7	16.9	5.8
50	5 12.5	5 13.4	4 58.3	5.0	1.7	11.0	3.8	17.0	5.8
51	5 12.8	5 13.6	4 58.5	5.1	1.7	11.1	3.8	17.1	5.8
52	5 13.0	5 13.9	4 58.7	5.2	1.8	11.2	3.8	17.2	5.9
53	5 13.3	5 14.1	4 59.0	5.3	1.8	11.3	3.9	17.3	5.9
54	5 13.5	5 14.4	4 59.2	5.4	1.8	11.4	3.9	17.4	5.9
55	5 13.8	5 14.6	4 59.5	5.5	1.9	11.5	3.9	17.5	6.0
56	5 14.0	5 14.9	4 59.7	5.6	1.9	11.6	4.0	17.6	6.0
57	5 14.3	5 15.1	4 59.9	5.7	1.9	11.7	4.0	17.7	6.0
58	5 14.5	5 15.4	5 00.2	5.8	2.0	11.8	4.0	17.8	6.1
59	5 14.8	5 15.6	5 00.4	5.9	2.0	11.9	4.1	17.9	6.1
60	5 15.0	5 15.9	5 00.7	6.0	2.1	12.0	4.1	18.0	6.2

21 ^m	SUN PLANETS	ARIES	MOON	ϑ or d	Corr ⁿ	ϑ or d	Corr ⁿ	ϑ or d	Corr ⁿ
s	o /	o /	o /	/ /	/ /	/ /	/ /	/ /	/ /
00	5 15.0	5 15.9	5 00.7	0.0	0.0	6.0	2.2	12.0	4.3
01	5 15.3	5 16.1	5 00.9	0.1	0.0	6.1	2.2	12.1	4.3
02	5 15.5	5 16.4	5 01.1	0.2	0.1	6.2	2.2	12.2	4.4
03	5 15.8	5 16.6	5 01.4	0.3	0.1	6.3	2.3	12.3	4.4
04	5 16.0	5 16.9	5 01.6	0.4	0.1	6.4	2.3	12.4	4.4
05	5 16.3	5 17.1	5 01.8	0.5	0.2	6.5	2.3	12.5	4.5
06	5 16.5	5 17.4	5 02.1	0.6	0.2	6.6	2.4	12.6	4.5
07	5 16.8	5 17.6	5 02.3	0.7	0.3	6.7	2.4	12.7	4.6
08	5 17.0	5 17.9	5 02.6	0.8	0.3	6.8	2.4	12.8	4.6
09	5 17.3	5 18.1	5 02.8	0.9	0.3	6.9	2.5	12.9	4.6
10	5 17.5	5 18.4	5 03.0	1.0	0.4	7.0	2.5	13.0	4.7
11	5 17.8	5 18.6	5 03.3	1.1	0.4	7.1	2.5	13.1	4.7
12	5 18.0	5 18.9	5 03.5	1.2	0.4	7.2	2.6	13.2	4.7
13	5 18.3	5 19.1	5 03.8	1.3	0.5	7.3	2.6	13.3	4.8
14	5 18.5	5 19.4	5 04.0	1.4	0.5	7.4	2.7	13.4	4.8
15	5 18.8	5 19.6	5 04.2	1.5	0.5	7.5	2.7	13.5	4.8
16	5 19.0	5 19.9	5 04.5	1.6	0.6	7.6	2.7	13.6	4.9
17	5 19.3	5 20.1	5 04.7	1.7	0.6	7.7	2.8	13.7	4.9
18	5 19.5	5 20.4	5 04.9	1.8	0.6	7.8	2.8	13.8	4.9
19	5 19.8	5 20.6	5 05.2	1.9	0.7	7.9	2.8	13.9	5.0
20	5 20.0	5 20.9	5 05.4	2.0	0.7	8.0	2.9	14.0	5.0
21	5 20.3	5 21.1	5 05.7	2.1	0.8	8.1	2.9	14.1	5.1
22	5 20.5	5 21.4	5 05.9	2.2	0.8	8.2	2.9	14.2	5.1
23	5 20.8	5 21.6	5 06.1	2.3	0.8	8.3	3.0	14.3	5.1
24	5 21.0	5 21.9	5 06.4	2.4	0.9	8.4	3.0	14.4	5.2
25	5 21.3	5 22.1	5 06.6	2.5	0.9	8.5	3.0	14.5	5.2
26	5 21.5	5 22.4	5 06.9	2.6	0.9	8.6	3.1	14.6	5.2
27	5 21.8	5 22.6	5 07.1	2.7	1.0	8.7	3.1	14.7	5.3
28	5 22.0	5 22.9	5 07.3	2.8	1.0	8.8	3.2	14.8	5.3
29	5 22.3	5 23.1	5 07.6	2.9	1.0	8.9	3.2	14.9	5.3
30	5 22.5	5 23.4	5 07.8	3.0	1.1	9.0	3.2	15.0	5.4
31	5 22.8	5 23.6	5 08.0	3.1	1.1	9.1	3.3	15.1	5.4
32	5 23.0	5 23.9	5 08.3	3.2	1.1	9.2	3.3	15.2	5.4
33	5 23.3	5 24.1	5 08.5	3.3	1.2	9.3	3.3	15.3	5.5
34	5 23.5	5 24.4	5 08.8	3.4	1.2	9.4	3.4	15.4	5.5
35	5 23.8	5 24.6	5 09.0	3.5	1.3	9.5	3.4	15.5	5.6
36	5 24.0	5 24.9	5 09.2	3.6	1.3	9.6	3.4	15.6	5.6
37	5 24.3	5 25.1	5 09.5	3.7	1.3	9.7	3.5	15.7	5.6
38	5 24.5	5 25.4	5 09.7	3.8	1.4	9.8	3.5	15.8	5.7
39	5 24.8	5 25.6	5 10.0	3.9	1.4	9.9	3.5	15.9	5.7
40	5 25.0	5 25.9	5 10.2	4.0	1.4	10.0	3.6	16.0	5.7
41	5 25.3	5 26.1	5 10.4	4.1	1.5	10.1	3.6	16.1	5.8
42	5 25.5	5 26.4	5 10.7	4.2	1.5	10.2	3.7	16.2	5.8
43	5 25.8	5 26.6	5 10.9	4.3	1.5	10.3	3.7	16.3	5.8
44	5 26.0	5 26.9	5 11.1	4.4	1.6	10.4	3.7	16.4	5.9
45	5 26.3	5 27.1	5 11.4	4.5	1.6	10.5	3.8	16.5	5.9
46	5 26.5	5 27.4	5 11.6	4.6	1.6	10.6	3.8	16.6	5.9
47	5 26.8	5 27.6	5 11.9	4.7	1.7	10.7	3.8	16.7	6.0
48	5 27.0	5 27.9	5 12.1	4.8	1.7	10.8	3.9	16.8	6.0
49	5 27.3	5 28.1	5 12.3	4.9	1.8	10.9	3.9	16.9	6.1
50	5 27.5	5 28.4	5 12.6	5.0	1.8	11.0	3.9	17.0	6.1
51	5 27.8	5 28.6	5 12.8	5.1	1.8	11.1	4.0	17.1	6.1
52	5 28.0	5 28.9	5 13.1	5.2	1.9	11.2	4.0	17.2	6.2
53	5 28.3	5 29.1	5 13.3	5.3	1.9	11.3	4.0	17.3	6.2
54	5 28.5	5 29.4	5 13.5	5.4	1.9	11.4	4.1	17.4	6.2
55	5 28.8	5 29.7	5 13.8	5.5	2.0	11.5	4.1	17.5	6.3
56	5 29.0	5 29.9	5 14.0	5.6	2.0	11.6	4.2	17.6	6.3
57	5 29.3	5 30.2	5 14.3	5.7	2.0	11.7	4.2	17.7	6.3
58	5 29.5	5 30.4	5 14.5	5.8	2.1	11.8	4.2	17.8	6.4
59	5 29.8	5 30.7	5 14.7	5.9	2.1	11.9	4.3	17.9	6.4
60	5 30.0	5 30.9	5 15.0	6.0	2.2	12.0	4.3	18.0	6.5

^m 22	SUN PLANETS	ARIES	MOON	v or d	Corr ⁿ	v or d	Corr ⁿ	v or d	Corr ⁿ	^m 23	SUN PLANETS	ARIES	MOON	v or d	Corr ⁿ	v or d	Corr ⁿ	v or d	Corr ⁿ
s	o /	o /	o /	/ /	/ /	/ /	/ /	/ /	/ /	s	o /	o /	o /	/ /	/ /	/ /	/ /	/ /	/ /
00	5 30.0	5 30.9	5 15.0	0.0	0.0	6.0	2.3	12.0	4.5	00	5 45.0	5 45.9	5 29.3	0.0	0.0	6.0	2.4	12.0	4.7
01	5 30.3	5 31.2	5 15.2	0.1	0.0	6.1	2.3	12.1	4.5	01	5 45.3	5 46.2	5 29.5	0.1	0.0	6.1	2.4	12.1	4.7
02	5 30.5	5 31.4	5 15.4	0.2	0.1	6.2	2.3	12.2	4.6	02	5 45.5	5 46.4	5 29.8	0.2	0.1	6.2	2.4	12.2	4.8
03	5 30.8	5 31.7	5 15.7	0.3	0.1	6.3	2.4	12.3	4.6	03	5 45.8	5 46.7	5 30.0	0.3	0.1	6.3	2.5	12.3	4.8
04	5 31.0	5 31.9	5 15.9	0.4	0.2	6.4	2.4	12.4	4.7	04	5 46.0	5 46.9	5 30.2	0.4	0.2	6.4	2.5	12.4	4.9
05	5 31.3	5 32.2	5 16.2	0.5	0.2	6.5	2.4	12.5	4.7	05	5 46.3	5 47.2	5 30.5	0.5	0.2	6.5	2.5	12.5	4.9
06	5 31.5	5 32.4	5 16.4	0.6	0.2	6.6	2.5	12.6	4.7	06	5 46.5	5 47.4	5 30.7	0.6	0.2	6.6	2.6	12.6	4.9
07	5 31.8	5 32.7	5 16.6	0.7	0.3	6.7	2.5	12.7	4.8	07	5 46.8	5 47.7	5 31.0	0.7	0.3	6.7	2.6	12.7	5.0
08	5 32.0	5 32.9	5 16.9	0.8	0.3	6.8	2.6	12.8	4.8	08	5 47.0	5 48.0	5 31.2	0.8	0.3	6.8	2.7	12.8	5.0
09	5 32.3	5 33.2	5 17.1	0.9	0.3	6.9	2.6	12.9	4.8	09	5 47.3	5 48.2	5 31.4	0.9	0.4	6.9	2.7	12.9	5.1
10	5 32.5	5 33.4	5 17.4	1.0	0.4	7.0	2.6	13.0	4.9	10	5 47.5	5 48.5	5 31.7	1.0	0.4	7.0	2.7	13.0	5.1
11	5 32.8	5 33.7	5 17.6	1.1	0.4	7.1	2.7	13.1	4.9	11	5 47.8	5 48.7	5 31.9	1.1	0.4	7.1	2.8	13.1	5.1
12	5 33.0	5 33.9	5 17.8	1.2	0.5	7.2	2.7	13.2	5.0	12	5 48.0	5 49.0	5 32.1	1.2	0.5	7.2	2.8	13.2	5.2
13	5 33.3	5 34.2	5 18.1	1.3	0.5	7.3	2.7	13.3	5.0	13	5 48.3	5 49.2	5 32.4	1.3	0.5	7.3	2.9	13.3	5.2
14	5 33.5	5 34.4	5 18.3	1.4	0.5	7.4	2.8	13.4	5.0	14	5 48.5	5 49.5	5 32.6	1.4	0.5	7.4	2.9	13.4	5.2
15	5 33.8	5 34.7	5 18.5	1.5	0.6	7.5	2.8	13.5	5.1	15	5 48.8	5 49.7	5 32.9	1.5	0.6	7.5	2.9	13.5	5.3
16	5 34.0	5 34.9	5 18.8	1.6	0.6	7.6	2.9	13.6	5.1	16	5 49.0	5 50.0	5 33.1	1.6	0.6	7.6	3.0	13.6	5.3
17	5 34.3	5 35.2	5 19.0	1.7	0.6	7.7	2.9	13.7	5.1	17	5 49.3	5 50.2	5 33.3	1.7	0.7	7.7	3.0	13.7	5.4
18	5 34.5	5 35.4	5 19.3	1.8	0.7	7.8	2.9	13.8	5.2	18	5 49.5	5 50.5	5 33.6	1.8	0.7	7.8	3.1	13.8	5.4
19	5 34.8	5 35.7	5 19.5	1.9	0.7	7.9	3.0	13.9	5.2	19	5 49.8	5 50.7	5 33.8	1.9	0.7	7.9	3.1	13.9	5.4
20	5 35.0	5 35.9	5 19.7	2.0	0.8	8.0	3.0	14.0	5.3	20	5 50.0	5 51.0	5 34.1	2.0	0.8	8.0	3.1	14.0	5.5
21	5 35.3	5 36.2	5 20.0	2.1	0.8	8.1	3.0	14.1	5.3	21	5 50.3	5 51.2	5 34.3	2.1	0.8	8.1	3.2	14.1	5.5
22	5 35.5	5 36.4	5 20.2	2.2	0.8	8.2	3.1	14.2	5.3	22	5 50.5	5 51.5	5 34.5	2.2	0.9	8.2	3.2	14.2	5.6
23	5 35.8	5 36.7	5 20.5	2.3	0.9	8.3	3.1	14.3	5.4	23	5 50.8	5 51.7	5 34.8	2.3	0.9	8.3	3.3	14.3	5.6
24	5 36.0	5 36.9	5 20.7	2.4	0.9	8.4	3.2	14.4	5.4	24	5 51.0	5 52.0	5 35.0	2.4	0.9	8.4	3.3	14.4	5.6
25	5 36.3	5 37.2	5 20.9	2.5	0.9	8.5	3.2	14.5	5.4	25	5 51.3	5 52.2	5 35.2	2.5	1.0	8.5	3.3	14.5	5.7
26	5 36.5	5 37.4	5 21.2	2.6	1.0	8.6	3.2	14.6	5.5	26	5 51.5	5 52.5	5 35.5	2.6	1.0	8.6	3.4	14.6	5.7
27	5 36.8	5 37.7	5 21.4	2.7	1.0	8.7	3.3	14.7	5.5	27	5 51.8	5 52.7	5 35.7	2.7	1.1	8.7	3.4	14.7	5.8
28	5 37.0	5 37.9	5 21.6	2.8	1.1	8.8	3.3	14.8	5.6	28	5 52.0	5 53.0	5 36.0	2.8	1.1	8.8	3.4	14.8	5.8
29	5 37.3	5 38.2	5 21.9	2.9	1.1	8.9	3.3	14.9	5.6	29	5 52.3	5 53.2	5 36.2	2.9	1.1	8.9	3.5	14.9	5.8
30	5 37.5	5 38.4	5 22.1	3.0	1.1	9.0	3.4	15.0	5.6	30	5 52.5	5 53.5	5 36.4	3.0	1.2	9.0	3.5	15.0	5.9
31	5 37.8	5 38.7	5 22.4	3.1	1.2	9.1	3.4	15.1	5.7	31	5 52.8	5 53.7	5 36.7	3.1	1.2	9.1	3.6	15.1	5.9
32	5 38.0	5 38.9	5 22.6	3.2	1.2	9.2	3.5	15.2	5.7	32	5 53.0	5 54.0	5 36.9	3.2	1.3	9.2	3.6	15.2	6.0
33	5 38.3	5 39.2	5 22.8	3.3	1.2	9.3	3.5	15.3	5.7	33	5 53.3	5 54.2	5 37.2	3.3	1.3	9.3	3.6	15.3	6.0
34	5 38.5	5 39.4	5 23.1	3.4	1.3	9.4	3.5	15.4	5.8	34	5 53.5	5 54.5	5 37.4	3.4	1.3	9.4	3.7	15.4	6.0
35	5 38.8	5 39.7	5 23.3	3.5	1.3	9.5	3.6	15.5	5.8	35	5 53.8	5 54.7	5 37.6	3.5	1.4	9.5	3.7	15.5	6.1
36	5 39.0	5 39.9	5 23.6	3.6	1.4	9.6	3.6	15.6	5.9	36	5 54.0	5 55.0	5 37.9	3.6	1.4	9.6	3.8	15.6	6.1
37	5 39.3	5 40.2	5 23.8	3.7	1.4	9.7	3.6	15.7	5.9	37	5 54.3	5 55.2	5 38.1	3.7	1.4	9.7	3.8	15.7	6.1
38	5 39.5	5 40.4	5 24.0	3.8	1.4	9.8	3.7	15.8	5.9	38	5 54.5	5 55.5	5 38.4	3.8	1.5	9.8	3.8	15.8	6.2
39	5 39.8	5 40.7	5 24.3	3.9	1.5	9.9	3.7	15.9	6.0	39	5 54.8	5 55.7	5 38.6	3.9	1.5	9.9	3.9	15.9	6.2
40	5 40.0	5 40.9	5 24.5	4.0	1.5	10.0	3.8	16.0	6.0	40	5 55.0	5 56.0	5 38.8	4.0	1.6	10.0	3.9	16.0	6.3
41	5 40.3	5 41.2	5 24.7	4.1	1.5	10.1	3.8	16.1	6.0	41	5 55.3	5 56.2	5 39.1	4.1	1.6	10.1	4.0	16.1	6.3
42	5 40.5	5 41.4	5 25.0	4.2	1.6	10.2	3.8	16.2	6.1	42	5 55.5	5 56.5	5 39.3	4.2	1.6	10.2	4.0	16.2	6.3
43	5 40.8	5 41.7	5 25.2	4.3	1.6	10.3	3.9	16.3	6.1	43	5 55.8	5 56.7	5 39.5	4.3	1.7	10.3	4.0	16.3	6.4
44	5 41.0	5 41.9	5 25.5	4.4	1.7	10.4	3.9	16.4	6.2	44	5 56.0	5 57.0	5 39.8	4.4	1.7	10.4	4.1	16.4	6.4
45	5 41.3	5 42.2	5 25.7	4.5	1.7	10.5	3.9	16.5	6.2	45	5 56.3	5 57.2	5 40.0	4.5	1.8	10.5	4.1	16.5	6.5
46	5 41.5	5 42.4	5 25.9	4.6	1.7	10.6	4.0	16.6	6.2	46	5 56.5	5 57.5	5 40.3	4.6	1.8	10.6	4.2	16.6	6.5
47	5 41.8	5 42.7	5 26.2	4.7	1.8	10.7	4.0	16.7	6.3	47	5 56.8	5 57.7	5 40.5	4.7	1.8	10.7	4.2	16.7	6.5
48	5 42.0	5 42.9	5 26.4	4.8	1.8	10.8	4.1	16.8	6.3	48	5 57.0	5 58.0	5 40.7	4.8	1.9	10.8	4.2	16.8	6.6
49	5 42.3	5 43.2	5 26.7	4.9	1.8	10.9	4.1	16.9	6.3	49	5 57.3	5 58.2	5 41.0	4.9	1.9	10.9	4.3	16.9	6.6
50	5 42.5	5 43.4	5 26.9	5.0	1.9	11.0	4.1	17.0	6.4	50	5 57.5	5 58.5	5 41.2	5.0	2.0	11.0	4.3	17.0	6.7
51	5 42.8	5 43.7	5 27.1	5.1	1.9	11.1	4.2	17.1	6.4	51	5 57.8	5 58.7	5 41.5	5.1	2.0	11.1	4.3	17.1	6.7
52	5 43.0	5 43.9	5 27.4	5.2	2.0	11.2	4.2	17.2	6.5	52	5 58.0	5 59.0	5 41.7	5.2	2.0	11.2	4.4	17.2	6.7
53	5 43.3	5 44.2	5 27.6	5.3	2.0	11.3	4.2	17.3	6.5	53	5 58.3	5 59.2	5 41.9	5.3	2.1	11.3	4.4	17.3	6.8
54	5 43.5	5 44.4	5 27.9	5.4	2.0	11.4	4.3	17.4	6.5	54	5 58.5	5 59.5	5 42.2	5.4	2.1	11.4	4.5	17.4	6.8
55	5 43.8	5 44.7	5 28.1	5.5	2.1	11.5	4.3	17.5	6.6	55	5 58.8	5 59.7	5 42.4	5.5	2.2	11.5	4.5	17.5	6.9
56	5 44.0	5 44.9	5 28.3	5.6	2.1	11.6	4.4	17.6	6.6	56	5 59.0	6 00.0	5 42.6	5.6	2.2	11.6	4.5	17.6	6.9
57	5 44.3	5 45.2	5 28.6	5.7	2.1	11.7	4.4	17.7	6.6	57	5 59.3	6 00.2	5 42.9	5.7	2.2	11.7	4.6	17.7	6.9
58	5 44.5	5 45.4	5 28.8	5.8	2.2	11.8	4.4	17.8	6.7	58	5 59.5	6 00.5	5 43.1	5.8	2.3	11.8	4.6	17.8	7.0
59	5 44.8	5 45.7	5 29.0	5.9	2.2	11.9	4.5	17.9	6.7	59	5 59.8	6 00.7	5 43.4	5.9	2.3	11.9	4.7	17.9	7.0
60	5 45.0	5 45.9	5 29.3	6.0	2.3	12.0	4.5	18.0	6.8	60	6 00.0	6 01.0	5 43.6	6.0	2.4	12.0	4.7	18.0	7.1

^m 24	SUN PLANETS	ARIES	MOON	$\frac{v}{d}$ or Corr ⁿ	$\frac{v}{d}$ or Corr ⁿ	$\frac{v}{d}$ or Corr ⁿ	^m 25	SUN PLANETS	ARIES	MOON	$\frac{v}{d}$ or Corr ⁿ	$\frac{v}{d}$ or Corr ⁿ	$\frac{v}{d}$ or Corr ⁿ
^s 00	6 00.0	6 01.0	5 43.6	0.0 0.0	6.0 2.5	12.0 4.9	^s 00	6 15.0	6 16.0	5 57.9	0.0 0.0	6.0 2.6	12.0 5.1
01	6 00.3	6 01.2	5 43.8	0.1 0.0	6.1 2.5	12.1 4.9	01	6 15.3	6 16.3	5 58.2	0.1 0.0	6.1 2.6	12.1 5.1
02	6 00.5	6 01.5	5 44.1	0.2 0.1	6.2 2.5	12.2 5.0	02	6 15.5	6 16.5	5 58.4	0.2 0.1	6.2 2.6	12.2 5.2
03	6 00.8	6 01.7	5 44.3	0.3 0.1	6.3 2.6	12.3 5.0	03	6 15.8	6 16.8	5 58.6	0.3 0.1	6.3 2.7	12.3 5.2
04	6 01.0	6 02.0	5 44.6	0.4 0.2	6.4 2.6	12.4 5.1	04	6 16.0	6 17.0	5 58.9	0.4 0.2	6.4 2.7	12.4 5.3
05	6 01.3	6 02.2	5 44.8	0.5 0.2	6.5 2.7	12.5 5.1	05	6 16.3	6 17.3	5 59.1	0.5 0.2	6.5 2.8	12.5 5.3
06	6 01.5	6 02.5	5 45.0	0.6 0.2	6.6 2.7	12.6 5.1	06	6 16.5	6 17.5	5 59.3	0.6 0.3	6.6 2.8	12.6 5.4
07	6 01.8	6 02.7	5 45.3	0.7 0.3	6.7 2.7	12.7 5.2	07	6 16.8	6 17.8	5 59.6	0.7 0.3	6.7 2.8	12.7 5.4
08	6 02.0	6 03.0	5 45.5	0.8 0.3	6.8 2.8	12.8 5.2	08	6 17.0	6 18.0	5 59.8	0.8 0.3	6.8 2.9	12.8 5.4
09	6 02.3	6 03.2	5 45.7	0.9 0.4	6.9 2.8	12.9 5.3	09	6 17.3	6 18.3	6 00.1	0.9 0.4	6.9 2.9	12.9 5.5
10	6 02.5	6 03.5	5 46.0	1.0 0.4	7.0 2.9	13.0 5.3	10	6 17.5	6 18.5	6 00.3	1.0 0.4	7.0 3.0	13.0 5.5
11	6 02.8	6 03.7	5 46.2	1.1 0.4	7.1 2.9	13.1 5.3	11	6 17.8	6 18.8	6 00.5	1.1 0.5	7.1 3.0	13.1 5.6
12	6 03.0	6 04.0	5 46.5	1.2 0.5	7.2 2.9	13.2 5.4	12	6 18.0	6 19.0	6 00.8	1.2 0.5	7.2 3.1	13.2 5.6
13	6 03.3	6 04.2	5 46.7	1.3 0.5	7.3 3.0	13.3 5.4	13	6 18.3	6 19.3	6 01.0	1.3 0.6	7.3 3.1	13.3 5.7
14	6 03.5	6 04.5	5 46.9	1.4 0.6	7.4 3.0	13.4 5.5	14	6 18.5	6 19.5	6 01.3	1.4 0.6	7.4 3.1	13.4 5.7
15	6 03.8	6 04.7	5 47.2	1.5 0.6	7.5 3.1	13.5 5.5	15	6 18.8	6 19.8	6 01.5	1.5 0.6	7.5 3.2	13.5 5.7
16	6 04.0	6 05.0	5 47.4	1.6 0.7	7.6 3.1	13.6 5.6	16	6 19.0	6 20.0	6 01.7	1.6 0.7	7.6 3.2	13.6 5.8
17	6 04.3	6 05.2	5 47.7	1.7 0.7	7.7 3.1	13.7 5.6	17	6 19.3	6 20.3	6 02.0	1.7 0.7	7.7 3.3	13.7 5.8
18	6 04.5	6 05.5	5 47.9	1.8 0.7	7.8 3.2	13.8 5.6	18	6 19.5	6 20.5	6 02.2	1.8 0.8	7.8 3.3	13.8 5.9
19	6 04.8	6 05.7	5 48.1	1.9 0.8	7.9 3.2	13.9 5.7	19	6 19.8	6 20.8	6 02.5	1.9 0.8	7.9 3.4	13.9 5.9
20	6 05.0	6 06.0	5 48.4	2.0 0.8	8.0 3.3	14.0 5.7	20	6 20.0	6 21.0	6 02.7	2.0 0.9	8.0 3.4	14.0 6.0
21	6 05.3	6 06.3	5 48.6	2.1 0.9	8.1 3.3	14.1 5.8	21	6 20.3	6 21.3	6 02.9	2.1 0.9	8.1 3.4	14.1 6.0
22	6 05.5	6 06.5	5 48.8	2.2 0.9	8.2 3.3	14.2 5.8	22	6 20.5	6 21.5	6 03.2	2.2 0.9	8.2 3.5	14.2 6.0
23	6 05.8	6 06.8	5 49.1	2.3 0.9	8.3 3.4	14.3 5.8	23	6 20.8	6 21.8	6 03.4	2.3 1.0	8.3 3.5	14.3 6.1
24	6 06.0	6 07.0	5 49.3	2.4 1.0	8.4 3.4	14.4 5.9	24	6 21.0	6 22.0	6 03.6	2.4 1.0	8.4 3.6	14.4 6.1
25	6 06.3	6 07.3	5 49.6	2.5 1.0	8.5 3.5	14.5 5.9	25	6 21.3	6 22.3	6 03.9	2.5 1.1	8.5 3.6	14.5 6.2
26	6 06.5	6 07.5	5 49.8	2.6 1.1	8.6 3.5	14.6 6.0	26	6 21.5	6 22.5	6 04.1	2.6 1.1	8.6 3.7	14.6 6.2
27	6 06.8	6 07.8	5 50.0	2.7 1.1	8.7 3.6	14.7 6.0	27	6 21.8	6 22.8	6 04.4	2.7 1.1	8.7 3.7	14.7 6.2
28	6 07.0	6 08.0	5 50.3	2.8 1.1	8.8 3.6	14.8 6.0	28	6 22.0	6 23.0	6 04.6	2.8 1.2	8.8 3.7	14.8 6.3
29	6 07.3	6 08.3	5 50.5	2.9 1.2	8.9 3.6	14.9 6.1	29	6 22.3	6 23.3	6 04.8	2.9 1.2	8.9 3.8	14.9 6.3
30	6 07.5	6 08.5	5 50.8	3.0 1.2	9.0 3.7	15.0 6.1	30	6 22.5	6 23.5	6 05.1	3.0 1.3	9.0 3.8	15.0 6.4
31	6 07.8	6 08.8	5 51.0	3.1 1.3	9.1 3.7	15.1 6.2	31	6 22.8	6 23.8	6 05.3	3.1 1.3	9.1 3.9	15.1 6.4
32	6 08.0	6 09.0	5 51.2	3.2 1.3	9.2 3.8	15.2 6.2	32	6 23.0	6 24.0	6 05.6	3.2 1.4	9.2 3.9	15.2 6.5
33	6 08.3	6 09.3	5 51.5	3.3 1.3	9.3 3.8	15.3 6.2	33	6 23.3	6 24.3	6 05.8	3.3 1.4	9.3 4.0	15.3 6.5
34	6 08.5	6 09.5	5 51.7	3.4 1.4	9.4 3.8	15.4 6.3	34	6 23.5	6 24.5	6 06.0	3.4 1.4	9.4 4.0	15.4 6.5
35	6 08.8	6 09.8	5 52.0	3.5 1.4	9.5 3.9	15.5 6.3	35	6 23.8	6 24.8	6 06.3	3.5 1.5	9.5 4.0	15.5 6.6
36	6 09.0	6 10.0	5 52.2	3.6 1.5	9.6 3.9	15.6 6.4	36	6 24.0	6 25.1	6 06.5	3.6 1.5	9.6 4.1	15.6 6.6
37	6 09.3	6 10.3	5 52.4	3.7 1.5	9.7 4.0	15.7 6.4	37	6 24.3	6 25.3	6 06.7	3.7 1.6	9.7 4.1	15.7 6.7
38	6 09.5	6 10.5	5 52.7	3.8 1.6	9.8 4.0	15.8 6.5	38	6 24.5	6 25.6	6 07.0	3.8 1.6	9.8 4.2	15.8 6.7
39	6 09.8	6 10.8	5 52.9	3.9 1.6	9.9 4.0	15.9 6.5	39	6 24.8	6 25.8	6 07.2	3.9 1.7	9.9 4.2	15.9 6.8
40	6 10.0	6 11.0	5 53.1	4.0 1.6	10.0 4.1	16.0 6.5	40	6 25.0	6 26.1	6 07.5	4.0 1.7	10.0 4.3	16.0 6.8
41	6 10.3	6 11.3	5 53.4	4.1 1.7	10.1 4.1	16.1 6.6	41	6 25.3	6 26.3	6 07.7	4.1 1.7	10.1 4.3	16.1 6.8
42	6 10.5	6 11.5	5 53.6	4.2 1.7	10.2 4.2	16.2 6.6	42	6 25.5	6 26.6	6 07.9	4.2 1.8	10.2 4.3	16.2 6.9
43	6 10.8	6 11.8	5 53.9	4.3 1.8	10.3 4.2	16.3 6.7	43	6 25.8	6 26.8	6 08.2	4.3 1.8	10.3 4.4	16.3 6.9
44	6 11.0	6 12.0	5 54.1	4.4 1.8	10.4 4.2	16.4 6.7	44	6 26.0	6 27.1	6 08.4	4.4 1.9	10.4 4.4	16.4 7.0
45	6 11.3	6 12.3	5 54.3	4.5 1.8	10.5 4.3	16.5 6.7	45	6 26.3	6 27.3	6 08.7	4.5 1.9	10.5 4.5	16.5 7.0
46	6 11.5	6 12.5	5 54.6	4.6 1.9	10.6 4.3	16.6 6.8	46	6 26.5	6 27.6	6 08.9	4.6 2.0	10.6 4.5	16.6 7.1
47	6 11.8	6 12.8	5 54.8	4.7 1.9	10.7 4.4	16.7 6.8	47	6 26.8	6 27.8	6 09.1	4.7 2.0	10.7 4.5	16.7 7.1
48	6 12.0	6 13.0	5 55.1	4.8 2.0	10.8 4.4	16.8 6.9	48	6 27.0	6 28.1	6 09.4	4.8 2.0	10.8 4.6	16.8 7.1
49	6 12.3	6 13.3	5 55.3	4.9 2.0	10.9 4.5	16.9 6.9	49	6 27.3	6 28.3	6 09.6	4.9 2.1	10.9 4.6	16.9 7.2
50	6 12.5	6 13.5	5 55.5	5.0 2.0	11.0 4.5	17.0 6.9	50	6 27.5	6 28.6	6 09.8	5.0 2.1	11.0 4.7	17.0 7.2
51	6 12.8	6 13.8	5 55.8	5.1 2.1	11.1 4.5	17.1 7.0	51	6 27.8	6 28.8	6 10.1	5.1 2.2	11.1 4.7	17.1 7.3
52	6 13.0	6 14.0	5 56.0	5.2 2.1	11.2 4.6	17.2 7.0	52	6 28.0	6 29.1	6 10.3	5.2 2.2	11.2 4.8	17.2 7.3
53	6 13.3	6 14.3	5 56.2	5.3 2.2	11.3 4.6	17.3 7.1	53	6 28.3	6 29.3	6 10.6	5.3 2.3	11.3 4.8	17.3 7.4
54	6 13.5	6 14.5	5 56.5	5.4 2.2	11.4 4.7	17.4 7.1	54	6 28.5	6 29.6	6 10.8	5.4 2.3	11.4 4.8	17.4 7.4
55	6 13.8	6 14.8	5 56.7	5.5 2.2	11.5 4.7	17.5 7.1	55	6 28.8	6 29.8	6 11.0	5.5 2.3	11.5 4.9	17.5 7.4
56	6 14.0	6 15.0	5 57.0	5.6 2.3	11.6 4.7	17.6 7.2	56	6 29.0	6 30.1	6 11.3	5.6 2.4	11.6 4.9	17.6 7.5
57	6 14.3	6 15.3	5 57.2	5.7 2.3	11.7 4.8	17.7 7.2	57	6 29.3	6 30.3	6 11.5	5.7 2.4	11.7 5.0	17.7 7.5
58	6 14.5	6 15.5	5 57.4	5.8 2.4	11.8 4.8	17.8 7.3	58	6 29.5	6 30.6	6 11.8	5.8 2.5	11.8 5.0	17.8 7.6
59	6 14.8	6 15.8	5 57.7	5.9 2.4	11.9 4.9	17.9 7.3	59	6 29.8	6 30.8	6 12.0	5.9 2.5	11.9 5.1	17.9 7.6
60	6 15.0	6 16.0	5 57.9	6.0 2.5	12.0 4.9	18.0 7.4	60	6 30.0	6 31.1	6 12.2	6.0 2.6	12.0 5.1	18.0 7.7

^m 26	SUN PLANETS	ARIES	MOON	ν or Corr ⁿ d	ν or Corr ⁿ d	ν or Corr ⁿ d	^m 27	SUN PLANETS	ARIES	MOON	ν or Corr ⁿ d	ν or Corr ⁿ d	ν or Corr ⁿ d
s	o	o	o	/	/	/	s	o	o	o	/	/	/
00	6 30.0	6 31.1	6 12.2	0.0	0.0	6.0 2.7 12.0 5.3	00	6 45.0	6 46.1	6 26.6	0.0	0.0	6.0 2.8 12.0 5.5
01	6 30.3	6 31.3	6 12.5	0.1	0.0	6.1 2.7 12.1 5.3	01	6 45.3	6 46.4	6 26.8	0.1	0.0	6.1 2.8 12.1 5.5
02	6 30.5	6 31.6	6 12.7	0.2	0.1	6.2 2.7 12.2 5.4	02	6 45.5	6 46.6	6 27.0	0.2	0.1	6.2 2.8 12.2 5.6
03	6 30.8	6 31.8	6 12.9	0.3	0.1	6.3 2.8 12.3 5.4	03	6 45.8	6 46.9	6 27.3	0.3	0.1	6.3 2.9 12.3 5.6
04	6 31.0	6 32.1	6 13.2	0.4	0.2	6.4 2.8 12.4 5.5	04	6 46.0	6 47.1	6 27.5	0.4	0.2	6.4 2.9 12.4 5.7
05	6 31.3	6 32.3	6 13.4	0.5	0.2	6.5 2.9 12.5 5.5	05	6 46.3	6 47.4	6 27.7	0.5	0.2	6.5 3.0 12.5 5.7
06	6 31.5	6 32.6	6 13.7	0.6	0.3	6.6 2.9 12.6 5.6	06	6 46.5	6 47.6	6 28.0	0.6	0.3	6.6 3.0 12.6 5.8
07	6 31.8	6 32.8	6 13.9	0.7	0.3	6.7 3.0 12.7 5.6	07	6 46.8	6 47.9	6 28.2	0.7	0.3	6.7 3.1 12.7 5.8
08	6 32.0	6 33.1	6 14.1	0.8	0.4	6.8 3.0 12.8 5.7	08	6 47.0	6 48.1	6 28.5	0.8	0.4	6.8 3.1 12.8 5.9
09	6 32.3	6 33.3	6 14.4	0.9	0.4	6.9 3.0 12.9 5.7	09	6 47.3	6 48.4	6 28.7	0.9	0.4	6.9 3.2 12.9 5.9
10	6 32.5	6 33.6	6 14.6	1.0	0.4	7.0 3.1 13.0 5.7	10	6 47.5	6 48.6	6 28.9	1.0	0.5	7.0 3.2 13.0 6.0
11	6 32.8	6 33.8	6 14.9	1.1	0.5	7.1 3.1 13.1 5.8	11	6 47.8	6 48.9	6 29.2	1.1	0.5	7.1 3.3 13.1 6.0
12	6 33.0	6 34.1	6 15.1	1.2	0.5	7.2 3.2 13.2 5.8	12	6 48.0	6 49.1	6 29.4	1.2	0.6	7.2 3.3 13.2 6.1
13	6 33.3	6 34.3	6 15.3	1.3	0.6	7.3 3.2 13.3 5.9	13	6 48.3	6 49.4	6 29.7	1.3	0.6	7.3 3.3 13.3 6.1
14	6 33.5	6 34.6	6 15.6	1.4	0.6	7.4 3.3 13.4 5.9	14	6 48.5	6 49.6	6 29.9	1.4	0.6	7.4 3.4 13.4 6.1
15	6 33.8	6 34.8	6 15.8	1.5	0.7	7.5 3.3 13.5 6.0	15	6 48.8	6 49.9	6 30.1	1.5	0.7	7.5 3.4 13.5 6.2
16	6 34.0	6 35.1	6 16.1	1.6	0.7	7.6 3.4 13.6 6.0	16	6 49.0	6 50.1	6 30.4	1.6	0.7	7.6 3.5 13.6 6.2
17	6 34.3	6 35.3	6 16.3	1.7	0.8	7.7 3.4 13.7 6.1	17	6 49.3	6 50.4	6 30.6	1.7	0.8	7.7 3.5 13.7 6.3
18	6 34.5	6 35.6	6 16.5	1.8	0.8	7.8 3.4 13.8 6.1	18	6 49.5	6 50.6	6 30.8	1.8	0.8	7.8 3.6 13.8 6.3
19	6 34.8	6 35.8	6 16.8	1.9	0.8	7.9 3.5 13.9 6.1	19	6 49.8	6 50.9	6 31.1	1.9	0.9	7.9 3.6 13.9 6.4
20	6 35.0	6 36.1	6 17.0	2.0	0.9	8.0 3.5 14.0 6.2	20	6 50.0	6 51.1	6 31.3	2.0	0.9	8.0 3.7 14.0 6.4
21	6 35.3	6 36.3	6 17.2	2.1	0.9	8.1 3.6 14.1 6.2	21	6 50.3	6 51.4	6 31.6	2.1	1.0	8.1 3.7 14.1 6.5
22	6 35.5	6 36.6	6 17.5	2.2	1.0	8.2 3.6 14.2 6.3	22	6 50.5	6 51.6	6 31.8	2.2	1.0	8.2 3.8 14.2 6.5
23	6 35.8	6 36.8	6 17.7	2.3	1.0	8.3 3.7 14.3 6.3	23	6 50.8	6 51.9	6 32.0	2.3	1.1	8.3 3.8 14.3 6.6
24	6 36.0	6 37.1	6 18.0	2.4	1.1	8.4 3.7 14.4 6.4	24	6 51.0	6 52.1	6 32.3	2.4	1.1	8.4 3.9 14.4 6.6
25	6 36.3	6 37.3	6 18.2	2.5	1.1	8.5 3.8 14.5 6.4	25	6 51.3	6 52.4	6 32.5	2.5	1.1	8.5 3.9 14.5 6.6
26	6 36.5	6 37.6	6 18.4	2.6	1.1	8.6 3.8 14.6 6.4	26	6 51.5	6 52.6	6 32.8	2.6	1.2	8.6 3.9 14.6 6.7
27	6 36.8	6 37.8	6 18.7	2.7	1.2	8.7 3.8 14.7 6.5	27	6 51.8	6 52.9	6 33.0	2.7	1.2	8.7 4.0 14.7 6.7
28	6 37.0	6 38.1	6 18.9	2.8	1.2	8.8 3.9 14.8 6.5	28	6 52.0	6 53.1	6 33.2	2.8	1.3	8.8 4.0 14.8 6.8
29	6 37.3	6 38.3	6 19.2	2.9	1.3	8.9 3.9 14.9 6.6	29	6 52.3	6 53.4	6 33.5	2.9	1.3	8.9 4.1 14.9 6.8
30	6 37.5	6 38.6	6 19.4	3.0	1.3	9.0 4.0 15.0 6.6	30	6 52.5	6 53.6	6 33.7	3.0	1.4	9.0 4.1 15.0 6.9
31	6 37.8	6 38.8	6 19.6	3.1	1.4	9.1 4.0 15.1 6.7	31	6 52.8	6 53.9	6 33.9	3.1	1.4	9.1 4.2 15.1 6.9
32	6 38.0	6 39.1	6 19.9	3.2	1.4	9.2 4.1 15.2 6.7	32	6 53.0	6 54.1	6 34.2	3.2	1.5	9.2 4.2 15.2 7.0
33	6 38.3	6 39.3	6 20.1	3.3	1.5	9.3 4.1 15.3 6.8	33	6 53.3	6 54.4	6 34.4	3.3	1.5	9.3 4.3 15.3 7.0
34	6 38.5	6 39.6	6 20.3	3.4	1.5	9.4 4.2 15.4 6.8	34	6 53.5	6 54.6	6 34.7	3.4	1.6	9.4 4.3 15.4 7.1
35	6 38.8	6 39.8	6 20.6	3.5	1.5	9.5 4.2 15.5 6.8	35	6 53.8	6 54.9	6 34.9	3.5	1.6	9.5 4.4 15.5 7.1
36	6 39.0	6 40.1	6 20.8	3.6	1.6	9.6 4.2 15.6 6.9	36	6 54.0	6 55.1	6 35.1	3.6	1.7	9.6 4.4 15.6 7.2
37	6 39.3	6 40.3	6 21.1	3.7	1.6	9.7 4.3 15.7 6.9	37	6 54.3	6 55.4	6 35.4	3.7	1.7	9.7 4.4 15.7 7.2
38	6 39.5	6 40.6	6 21.3	3.8	1.7	9.8 4.3 15.8 7.0	38	6 54.5	6 55.6	6 35.6	3.8	1.7	9.8 4.5 15.8 7.2
39	6 39.8	6 40.8	6 21.5	3.9	1.7	9.9 4.4 15.9 7.0	39	6 54.8	6 55.9	6 35.9	3.9	1.8	9.9 4.5 15.9 7.3
40	6 40.0	6 41.1	6 21.8	4.0	1.8	10.0 4.4 16.0 7.1	40	6 55.0	6 56.1	6 36.1	4.0	1.8	10.0 4.6 16.0 7.3
41	6 40.3	6 41.3	6 22.0	4.1	1.8	10.1 4.5 16.1 7.1	41	6 55.3	6 56.4	6 36.3	4.1	1.9	10.1 4.6 16.1 7.4
42	6 40.5	6 41.6	6 22.3	4.2	1.9	10.2 4.5 16.2 7.2	42	6 55.5	6 56.6	6 36.6	4.2	1.9	10.2 4.7 16.2 7.4
43	6 40.8	6 41.8	6 22.5	4.3	1.9	10.3 4.5 16.3 7.2	43	6 55.8	6 56.9	6 36.8	4.3	2.0	10.3 4.7 16.3 7.5
44	6 41.0	6 42.1	6 22.7	4.4	1.9	10.4 4.6 16.4 7.2	44	6 56.0	6 57.1	6 37.0	4.4	2.0	10.4 4.8 16.4 7.5
45	6 41.3	6 42.3	6 23.0	4.5	2.0	10.5 4.6 16.5 7.3	45	6 56.3	6 57.4	6 37.3	4.5	2.1	10.5 4.8 16.5 7.6
46	6 41.5	6 42.6	6 23.2	4.6	2.0	10.6 4.7 16.6 7.3	46	6 56.5	6 57.6	6 37.5	4.6	2.1	10.6 4.9 16.6 7.6
47	6 41.8	6 42.8	6 23.4	4.7	2.1	10.7 4.7 16.7 7.4	47	6 56.8	6 57.9	6 37.8	4.7	2.2	10.7 4.9 16.7 7.7
48	6 42.0	6 43.1	6 23.7	4.8	2.1	10.8 4.8 16.8 7.4	48	6 57.0	6 58.1	6 38.0	4.8	2.2	10.8 5.0 16.8 7.7
49	6 42.3	6 43.4	6 23.9	4.9	2.2	10.9 4.8 16.9 7.5	49	6 57.3	6 58.4	6 38.2	4.9	2.2	10.9 5.0 16.9 7.7
50	6 42.5	6 43.6	6 24.2	5.0	2.2	11.0 4.9 17.0 7.5	50	6 57.5	6 58.6	6 38.5	5.0	2.3	11.0 5.0 17.0 7.8
51	6 42.8	6 43.9	6 24.4	5.1	2.3	11.1 4.9 17.1 7.6	51	6 57.8	6 58.9	6 38.7	5.1	2.3	11.1 5.1 17.1 7.8
52	6 43.0	6 44.1	6 24.6	5.2	2.3	11.2 4.9 17.2 7.6	52	6 58.0	6 59.1	6 39.0	5.2	2.4	11.2 5.1 17.2 7.9
53	6 43.3	6 44.4	6 24.9	5.3	2.3	11.3 5.0 17.3 7.6	53	6 58.3	6 59.4	6 39.2	5.3	2.4	11.3 5.2 17.3 7.9
54	6 43.5	6 44.6	6 25.1	5.4	2.4	11.4 5.0 17.4 7.7	54	6 58.5	6 59.6	6 39.4	5.4	2.5	11.4 5.2 17.4 8.0
55	6 43.8	6 44.9	6 25.4	5.5	2.4	11.5 5.1 17.5 7.7	55	6 58.8	6 59.9	6 39.7	5.5	2.5	11.5 5.3 17.5 8.0
56	6 44.0	6 45.1	6 25.6	5.6	2.5	11.6 5.1 17.6 7.8	56	6 59.0	7 00.1	6 39.9	5.6	2.6	11.6 5.3 17.6 8.1
57	6 44.3	6 45.4	6 25.8	5.7	2.5	11.7 5.2 17.7 7.8	57	6 59.3	7 00.4	6 40.2	5.7	2.6	11.7 5.4 17.7 8.1
58	6 44.5	6 45.6	6 26.1	5.8	2.6	11.8 5.2 17.8 7.9	58	6 59.5	7 00.6	6 40.4	5.8	2.7	11.8 5.4 17.8 8.2
59	6 44.8	6 45.9	6 26.3	5.9	2.6	11.9 5.3 17.9 7.9	59	6 59.8	7 00.9	6 40.6	5.9	2.7	11.9 5.5 17.9 8.2
60	6 45.0	6 46.1	6 26.6	6.0	2.7	12.0 5.3 18.0 8.0	60	7 00.0	7 01.1	6 40.9	6.0	2.8	12.0 5.5 18.0 8.3

28 ^m	SUN PLANETS	ARIES	MOON	ν or d	Corr ⁿ	ν or d	Corr ⁿ	ν or d	Corr ⁿ	29 ^m	SUN PLANETS	ARIES	MOON	ν or d	Corr ⁿ	ν or d	Corr ⁿ	ν or d	Corr ⁿ
00	7 00.0	7 01.1	6 40.9	0.0	0.0	6.0	2.9	12.0	5.7	00	7 15.0	7 16.2	6 55.2	0.0	0.0	6.0	3.0	12.0	5.9
01	7 00.3	7 01.4	6 41.1	0.1	0.0	6.1	2.9	12.1	5.7	01	7 15.3	7 16.4	6 55.4	0.1	0.0	6.1	3.0	12.1	5.9
02	7 00.5	7 01.7	6 41.3	0.2	0.1	6.2	2.9	12.2	5.8	02	7 15.5	7 16.7	6 55.7	0.2	0.1	6.2	3.0	12.2	6.0
03	7 00.8	7 01.9	6 41.6	0.3	0.1	6.3	3.0	12.3	5.8	03	7 15.8	7 16.9	6 55.9	0.3	0.1	6.3	3.1	12.3	6.0
04	7 01.0	7 02.2	6 41.8	0.4	0.2	6.4	3.0	12.4	5.9	04	7 16.0	7 17.2	6 56.1	0.4	0.2	6.4	3.1	12.4	6.1
05	7 01.3	7 02.4	6 42.1	0.5	0.2	6.5	3.1	12.5	5.9	05	7 16.3	7 17.4	6 56.4	0.5	0.2	6.5	3.2	12.5	6.1
06	7 01.5	7 02.7	6 42.3	0.6	0.3	6.6	3.1	12.6	6.0	06	7 16.5	7 17.7	6 56.6	0.6	0.3	6.6	3.2	12.6	6.2
07	7 01.8	7 02.9	6 42.5	0.7	0.3	6.7	3.2	12.7	6.0	07	7 16.8	7 17.9	6 56.9	0.7	0.3	6.7	3.3	12.7	6.2
08	7 02.0	7 03.2	6 42.8	0.8	0.4	6.8	3.2	12.8	6.1	08	7 17.0	7 18.2	6 57.1	0.8	0.4	6.8	3.3	12.8	6.3
09	7 02.3	7 03.4	6 43.0	0.9	0.4	6.9	3.3	12.9	6.1	09	7 17.3	7 18.4	6 57.3	0.9	0.4	6.9	3.4	12.9	6.3
10	7 02.5	7 03.7	6 43.3	1.0	0.5	7.0	3.3	13.0	6.2	10	7 17.5	7 18.7	6 57.6	1.0	0.5	7.0	3.4	13.0	6.4
11	7 02.8	7 03.9	6 43.5	1.1	0.5	7.1	3.4	13.1	6.2	11	7 17.8	7 18.9	6 57.8	1.1	0.5	7.1	3.5	13.1	6.4
12	7 03.0	7 04.2	6 43.7	1.2	0.6	7.2	3.4	13.2	6.3	12	7 18.0	7 19.2	6 58.0	1.2	0.6	7.2	3.5	13.2	6.5
13	7 03.3	7 04.4	6 44.0	1.3	0.6	7.3	3.5	13.3	6.3	13	7 18.3	7 19.4	6 58.3	1.3	0.6	7.3	3.6	13.3	6.5
14	7 03.5	7 04.7	6 44.2	1.4	0.7	7.4	3.5	13.4	6.4	14	7 18.5	7 19.7	6 58.5	1.4	0.7	7.4	3.6	13.4	6.6
15	7 03.8	7 04.9	6 44.4	1.5	0.7	7.5	3.6	13.5	6.4	15	7 18.8	7 20.0	6 58.8	1.5	0.7	7.5	3.7	13.5	6.6
16	7 04.0	7 05.2	6 44.7	1.6	0.8	7.6	3.6	13.6	6.5	16	7 19.0	7 20.2	6 59.0	1.6	0.8	7.6	3.7	13.6	6.7
17	7 04.3	7 05.4	6 44.9	1.7	0.8	7.7	3.7	13.7	6.5	17	7 19.3	7 20.5	6 59.2	1.7	0.8	7.7	3.8	13.7	6.7
18	7 04.5	7 05.7	6 45.2	1.8	0.9	7.8	3.7	13.8	6.6	18	7 19.5	7 20.7	6 59.5	1.8	0.9	7.8	3.8	13.8	6.8
19	7 04.8	7 05.9	6 45.4	1.9	0.9	7.9	3.8	13.9	6.6	19	7 19.8	7 21.0	6 59.7	1.9	0.9	7.9	3.9	13.9	6.8
20	7 05.0	7 06.2	6 45.6	2.0	1.0	8.0	3.8	14.0	6.7	20	7 20.0	7 21.2	7 00.0	2.0	1.0	8.0	3.9	14.0	6.9
21	7 05.3	7 06.4	6 45.9	2.1	1.0	8.1	3.8	14.1	6.7	21	7 20.3	7 21.5	7 00.2	2.1	1.0	8.1	4.0	14.1	6.9
22	7 05.5	7 06.7	6 46.1	2.2	1.0	8.2	3.9	14.2	6.7	22	7 20.5	7 21.7	7 00.4	2.2	1.1	8.2	4.0	14.2	7.0
23	7 05.8	7 06.9	6 46.4	2.3	1.1	8.3	3.9	14.3	6.8	23	7 20.8	7 22.0	7 00.7	2.3	1.1	8.3	4.1	14.3	7.0
24	7 06.0	7 07.2	6 46.6	2.4	1.1	8.4	4.0	14.4	6.8	24	7 21.0	7 22.2	7 00.9	2.4	1.2	8.4	4.1	14.4	7.1
25	7 06.3	7 07.4	6 46.8	2.5	1.2	8.5	4.0	14.5	6.9	25	7 21.3	7 22.5	7 01.1	2.5	1.2	8.5	4.2	14.5	7.1
26	7 06.5	7 07.7	6 47.1	2.6	1.2	8.6	4.1	14.6	6.9	26	7 21.5	7 22.7	7 01.4	2.6	1.3	8.6	4.2	14.6	7.2
27	7 06.8	7 07.9	6 47.3	2.7	1.3	8.7	4.1	14.7	7.0	27	7 21.8	7 23.0	7 01.6	2.7	1.3	8.7	4.3	14.7	7.2
28	7 07.0	7 08.2	6 47.5	2.8	1.3	8.8	4.2	14.8	7.0	28	7 22.0	7 23.2	7 01.9	2.8	1.4	8.8	4.3	14.8	7.3
29	7 07.3	7 08.4	6 47.8	2.9	1.4	8.9	4.2	14.9	7.1	29	7 22.3	7 23.5	7 02.1	2.9	1.4	8.9	4.4	14.9	7.3
30	7 07.5	7 08.7	6 48.0	3.0	1.4	9.0	4.3	15.0	7.1	30	7 22.5	7 23.7	7 02.3	3.0	1.5	9.0	4.4	15.0	7.4
31	7 07.8	7 08.9	6 48.3	3.1	1.5	9.1	4.3	15.1	7.2	31	7 22.8	7 24.0	7 02.6	3.1	1.5	9.1	4.5	15.1	7.4
32	7 08.0	7 09.2	6 48.5	3.2	1.5	9.2	4.4	15.2	7.2	32	7 23.0	7 24.2	7 02.8	3.2	1.6	9.2	4.5	15.2	7.5
33	7 08.3	7 09.4	6 48.7	3.3	1.6	9.3	4.4	15.3	7.3	33	7 23.3	7 24.5	7 03.1	3.3	1.6	9.3	4.6	15.3	7.5
34	7 08.5	7 09.7	6 49.0	3.4	1.6	9.4	4.5	15.4	7.3	34	7 23.5	7 24.7	7 03.3	3.4	1.7	9.4	4.6	15.4	7.6
35	7 08.8	7 09.9	6 49.2	3.5	1.7	9.5	4.5	15.5	7.4	35	7 23.8	7 25.0	7 03.5	3.5	1.7	9.5	4.7	15.5	7.6
36	7 09.0	7 10.2	6 49.5	3.6	1.7	9.6	4.6	15.6	7.4	36	7 24.0	7 25.2	7 03.8	3.6	1.8	9.6	4.7	15.6	7.7
37	7 09.3	7 10.4	6 49.7	3.7	1.8	9.7	4.6	15.7	7.5	37	7 24.3	7 25.5	7 04.0	3.7	1.8	9.7	4.8	15.7	7.7
38	7 09.5	7 10.7	6 49.9	3.8	1.8	9.8	4.7	15.8	7.5	38	7 24.5	7 25.7	7 04.3	3.8	1.9	9.8	4.8	15.8	7.8
39	7 09.8	7 10.9	6 50.2	3.9	1.9	9.9	4.7	15.9	7.6	39	7 24.8	7 26.0	7 04.5	3.9	1.9	9.9	4.9	15.9	7.8
40	7 10.0	7 11.2	6 50.4	4.0	1.9	10.0	4.8	16.0	7.6	40	7 25.0	7 26.2	7 04.7	4.0	2.0	10.0	4.9	16.0	7.9
41	7 10.3	7 11.4	6 50.6	4.1	1.9	10.1	4.8	16.1	7.6	41	7 25.3	7 26.5	7 05.0	4.1	2.0	10.1	5.0	16.1	7.9
42	7 10.5	7 11.7	6 50.9	4.2	2.0	10.2	4.8	16.2	7.7	42	7 25.5	7 26.7	7 05.2	4.2	2.1	10.2	5.0	16.2	8.0
43	7 10.8	7 11.9	6 51.1	4.3	2.0	10.3	4.9	16.3	7.7	43	7 25.8	7 27.0	7 05.4	4.3	2.1	10.3	5.1	16.3	8.0
44	7 11.0	7 12.2	6 51.4	4.4	2.1	10.4	4.9	16.4	7.8	44	7 26.0	7 27.2	7 05.7	4.4	2.2	10.4	5.1	16.4	8.1
45	7 11.3	7 12.4	6 51.6	4.5	2.1	10.5	5.0	16.5	7.8	45	7 26.3	7 27.5	7 05.9	4.5	2.2	10.5	5.2	16.5	8.1
46	7 11.5	7 12.7	6 51.8	4.6	2.2	10.6	5.0	16.6	7.9	46	7 26.5	7 27.7	7 06.2	4.6	2.3	10.6	5.2	16.6	8.2
47	7 11.8	7 12.9	6 52.1	4.7	2.2	10.7	5.1	16.7	7.9	47	7 26.8	7 28.0	7 06.4	4.7	2.3	10.7	5.3	16.7	8.2
48	7 12.0	7 13.2	6 52.3	4.8	2.3	10.8	5.1	16.8	8.0	48	7 27.0	7 28.2	7 06.6	4.8	2.4	10.8	5.3	16.8	8.3
49	7 12.3	7 13.4	6 52.6	4.9	2.3	10.9	5.2	16.9	8.0	49	7 27.3	7 28.5	7 06.9	4.9	2.4	10.9	5.4	16.9	8.3
50	7 12.5	7 13.7	6 52.8	5.0	2.4	11.0	5.2	17.0	8.1	50	7 27.5	7 28.7	7 07.1	5.0	2.5	11.0	5.4	17.0	8.4
51	7 12.8	7 13.9	6 53.0	5.1	2.4	11.1	5.3	17.1	8.1	51	7 27.8	7 29.0	7 07.4	5.1	2.5	11.1	5.5	17.1	8.4
52	7 13.0	7 14.2	6 53.3	5.2	2.5	11.2	5.3	17.2	8.2	52	7 28.0	7 29.2	7 07.6	5.2	2.6	11.2	5.5	17.2	8.5
53	7 13.3	7 14.4	6 53.5	5.3	2.5	11.3	5.4	17.3	8.2	53	7 28.3	7 29.5	7 07.8	5.3	2.6	11.3	5.6	17.3	8.5
54	7 13.5	7 14.7	6 53.8	5.4	2.6	11.4	5.4	17.4	8.3	54	7 28.5	7 29.7	7 08.1	5.4	2.7	11.4	5.6	17.4	8.6
55	7 13.8	7 14.9	6 54.0	5.5	2.6	11.5	5.5	17.5	8.3	55	7 28.8	7 30.0	7 08.3	5.5	2.7	11.5	5.7	17.5	8.6
56	7 14.0	7 15.2	6 54.2	5.6	2.7	11.6	5.5	17.6	8.4	56	7 29.0	7 30.2	7 08.5	5.6	2.8	11.6	5.7	17.6	8.7
57	7 14.3	7 15.4	6 54.5	5.7	2.7	11.7	5.6	17.7	8.4	57	7 29.3	7 30.5	7 08.8	5.7	2.8	11.7	5.8	17.7	8.7
58	7 14.5	7 15.7	6 54.7	5.8	2.8	11.8	5.6	17.8	8.5	58	7 29.5	7 30.7	7 09.0	5.8	2.9	11.8	5.8	17.8	8.8
59	7 14.8	7 15.9	6 54.9	5.9	2.8	11.9	5.7	17.9	8.5	59	7 29.8	7 31.0	7 09.3	5.9	2.9	11.9	5.9	17.9	8.8
60	7 15.0	7 16.2	6 55.2	6.0	2.9	12.0	5.7	18.0	8.6	60	7 30.0	7 31.2	7 09.5	6.0	3.0	12.0	5.9	18.0	8.9

30 ^m	SUN PLANETS	ARIES	MOON	v or d	Corr ⁿ	v or d	Corr ⁿ	v or d	Corr ⁿ	31 ^m	SUN PLANETS	ARIES	MOON	v or d	Corr ⁿ	v or d	Corr ⁿ	v or d	Corr ⁿ
s	°	°	°	°	°	°	°	°	°	s	°	°	°	°	°	°	°	°	°
00	7 30.0	7 31.2	7 09.5	0.0	0.0	6.0	3.1	12.0	6.1	00	7 45.0	7 46.3	7 23.8	0.0	0.0	6.0	3.2	12.0	6.3
01	7 30.3	7 31.5	7 09.7	0.1	0.1	6.1	3.1	12.1	6.2	01	7 45.3	7 46.5	7 24.1	0.1	0.1	6.1	3.2	12.1	6.4
02	7 30.5	7 31.7	7 10.0	0.2	0.1	6.2	3.2	12.2	6.2	02	7 45.5	7 46.8	7 24.3	0.2	0.1	6.2	3.3	12.2	6.4
03	7 30.8	7 32.0	7 10.2	0.3	0.2	6.3	3.2	12.3	6.3	03	7 45.8	7 47.0	7 24.5	0.3	0.2	6.3	3.3	12.3	6.5
04	7 31.0	7 32.2	7 10.5	0.4	0.2	6.4	3.3	12.4	6.3	04	7 46.0	7 47.3	7 24.8	0.4	0.2	6.4	3.4	12.4	6.5
05	7 31.3	7 32.5	7 10.7	0.5	0.3	6.5	3.3	12.5	6.4	05	7 46.3	7 47.5	7 25.0	0.5	0.3	6.5	3.4	12.5	6.6
06	7 31.5	7 32.7	7 10.9	0.6	0.3	6.6	3.4	12.6	6.4	06	7 46.5	7 47.8	7 25.2	0.6	0.3	6.6	3.5	12.6	6.6
07	7 31.8	7 33.0	7 11.2	0.7	0.4	6.7	3.4	12.7	6.5	07	7 46.8	7 48.0	7 25.5	0.7	0.4	6.7	3.5	12.7	6.7
08	7 32.0	7 33.2	7 11.4	0.8	0.4	6.8	3.5	12.8	6.5	08	7 47.0	7 48.3	7 25.7	0.8	0.4	6.8	3.6	12.8	6.7
09	7 32.3	7 33.5	7 11.6	0.9	0.5	6.9	3.5	12.9	6.6	09	7 47.3	7 48.5	7 26.0	0.9	0.5	6.9	3.6	12.9	6.8
10	7 32.5	7 33.7	7 11.9	1.0	0.5	7.0	3.6	13.0	6.6	10	7 47.5	7 48.8	7 26.2	1.0	0.5	7.0	3.7	13.0	6.8
11	7 32.8	7 34.0	7 12.1	1.1	0.6	7.1	3.6	13.1	6.7	11	7 47.8	7 49.0	7 26.4	1.1	0.6	7.1	3.7	13.1	6.9
12	7 33.0	7 34.2	7 12.4	1.2	0.6	7.2	3.7	13.2	6.7	12	7 48.0	7 49.3	7 26.7	1.2	0.6	7.2	3.8	13.2	6.9
13	7 33.3	7 34.5	7 12.6	1.3	0.7	7.3	3.7	13.3	6.8	13	7 48.3	7 49.5	7 26.9	1.3	0.7	7.3	3.8	13.3	7.0
14	7 33.5	7 34.7	7 12.8	1.4	0.7	7.4	3.8	13.4	6.8	14	7 48.5	7 49.8	7 27.2	1.4	0.7	7.4	3.9	13.4	7.0
15	7 33.8	7 35.0	7 13.1	1.5	0.8	7.5	3.8	13.5	6.9	15	7 48.8	7 50.0	7 27.4	1.5	0.8	7.5	3.9	13.5	7.1
16	7 34.0	7 35.2	7 13.3	1.6	0.8	7.6	3.9	13.6	6.9	16	7 49.0	7 50.3	7 27.6	1.6	0.8	7.6	4.0	13.6	7.1
17	7 34.3	7 35.5	7 13.6	1.7	0.9	7.7	3.9	13.7	7.0	17	7 49.3	7 50.5	7 27.9	1.7	0.9	7.7	4.0	13.7	7.2
18	7 34.5	7 35.7	7 13.8	1.8	0.9	7.8	4.0	13.8	7.0	18	7 49.5	7 50.8	7 28.1	1.8	0.9	7.8	4.1	13.8	7.2
19	7 34.8	7 36.0	7 14.0	1.9	1.0	7.9	4.0	13.9	7.1	19	7 49.8	7 51.0	7 28.4	1.9	1.0	7.9	4.1	13.9	7.3
20	7 35.0	7 36.2	7 14.3	2.0	1.0	8.0	4.1	14.0	7.1	20	7 50.0	7 51.3	7 28.6	2.0	1.1	8.0	4.2	14.0	7.4
21	7 35.3	7 36.5	7 14.5	2.1	1.1	8.1	4.1	14.1	7.2	21	7 50.3	7 51.5	7 28.8	2.1	1.1	8.1	4.3	14.1	7.4
22	7 35.5	7 36.7	7 14.7	2.2	1.1	8.2	4.2	14.2	7.2	22	7 50.5	7 51.8	7 29.1	2.2	1.2	8.2	4.3	14.2	7.5
23	7 35.8	7 37.0	7 15.0	2.3	1.2	8.3	4.2	14.3	7.3	23	7 50.8	7 52.0	7 29.3	2.3	1.2	8.3	4.4	14.3	7.5
24	7 36.0	7 37.2	7 15.2	2.4	1.2	8.4	4.3	14.4	7.3	24	7 51.0	7 52.3	7 29.5	2.4	1.3	8.4	4.4	14.4	7.6
25	7 36.3	7 37.5	7 15.5	2.5	1.3	8.5	4.3	14.5	7.4	25	7 51.3	7 52.5	7 29.8	2.5	1.3	8.5	4.5	14.5	7.6
26	7 36.5	7 37.7	7 15.7	2.6	1.3	8.6	4.4	14.6	7.4	26	7 51.5	7 52.8	7 30.0	2.6	1.4	8.6	4.5	14.6	7.7
27	7 36.8	7 38.0	7 15.9	2.7	1.4	8.7	4.4	14.7	7.5	27	7 51.8	7 53.0	7 30.3	2.7	1.4	8.7	4.6	14.7	7.7
28	7 37.0	7 38.3	7 16.2	2.8	1.4	8.8	4.5	14.8	7.5	28	7 52.0	7 53.3	7 30.5	2.8	1.5	8.8	4.6	14.8	7.8
29	7 37.3	7 38.5	7 16.4	2.9	1.5	8.9	4.5	14.9	7.6	29	7 52.3	7 53.5	7 30.7	2.9	1.5	8.9	4.7	14.9	7.8
30	7 37.5	7 38.8	7 16.7	3.0	1.5	9.0	4.6	15.0	7.6	30	7 52.5	7 53.8	7 31.0	3.0	1.6	9.0	4.7	15.0	7.9
31	7 37.8	7 39.0	7 16.9	3.1	1.6	9.1	4.6	15.1	7.7	31	7 52.8	7 54.0	7 31.2	3.1	1.6	9.1	4.8	15.1	7.9
32	7 38.0	7 39.3	7 17.1	3.2	1.6	9.2	4.7	15.2	7.7	32	7 53.0	7 54.3	7 31.5	3.2	1.7	9.2	4.8	15.2	8.0
33	7 38.3	7 39.5	7 17.4	3.3	1.7	9.3	4.7	15.3	7.8	33	7 53.3	7 54.5	7 31.7	3.3	1.7	9.3	4.9	15.3	8.0
34	7 38.5	7 39.8	7 17.6	3.4	1.7	9.4	4.8	15.4	7.8	34	7 53.5	7 54.8	7 31.9	3.4	1.8	9.4	4.9	15.4	8.1
35	7 38.8	7 40.0	7 17.9	3.5	1.8	9.5	4.8	15.5	7.9	35	7 53.8	7 55.0	7 32.2	3.5	1.8	9.5	5.0	15.5	8.1
36	7 39.0	7 40.3	7 18.1	3.6	1.8	9.6	4.9	15.6	7.9	36	7 54.0	7 55.3	7 32.4	3.6	1.9	9.6	5.0	15.6	8.2
37	7 39.3	7 40.5	7 18.3	3.7	1.9	9.7	4.9	15.7	8.0	37	7 54.3	7 55.5	7 32.6	3.7	1.9	9.7	5.1	15.7	8.2
38	7 39.5	7 40.8	7 18.6	3.8	1.9	9.8	5.0	15.8	8.0	38	7 54.5	7 55.8	7 32.9	3.8	2.0	9.8	5.1	15.8	8.3
39	7 39.8	7 41.0	7 18.8	3.9	2.0	9.9	5.0	15.9	8.1	39	7 54.8	7 56.0	7 33.1	3.9	2.0	9.9	5.2	15.9	8.3
40	7 40.0	7 41.3	7 19.0	4.0	2.0	10.0	5.1	16.0	8.1	40	7 55.0	7 56.3	7 33.4	4.0	2.1	10.0	5.3	16.0	8.4
41	7 40.3	7 41.5	7 19.3	4.1	2.1	10.1	5.1	16.1	8.2	41	7 55.3	7 56.6	7 33.6	4.1	2.2	10.1	5.3	16.1	8.5
42	7 40.5	7 41.8	7 19.5	4.2	2.1	10.2	5.2	16.2	8.2	42	7 55.5	7 56.8	7 33.8	4.2	2.2	10.2	5.4	16.2	8.5
43	7 40.8	7 42.0	7 19.8	4.3	2.2	10.3	5.2	16.3	8.3	43	7 55.8	7 57.1	7 34.1	4.3	2.3	10.3	5.4	16.3	8.6
44	7 41.0	7 42.3	7 20.0	4.4	2.2	10.4	5.3	16.4	8.3	44	7 56.0	7 57.3	7 34.3	4.4	2.3	10.4	5.5	16.4	8.6
45	7 41.3	7 42.5	7 20.2	4.5	2.3	10.5	5.3	16.5	8.4	45	7 56.3	7 57.6	7 34.6	4.5	2.4	10.5	5.5	16.5	8.7
46	7 41.5	7 42.8	7 20.5	4.6	2.3	10.6	5.4	16.6	8.4	46	7 56.5	7 57.8	7 34.8	4.6	2.4	10.6	5.6	16.6	8.7
47	7 41.8	7 43.0	7 20.7	4.7	2.4	10.7	5.4	16.7	8.5	47	7 56.8	7 58.1	7 35.0	4.7	2.5	10.7	5.6	16.7	8.8
48	7 42.0	7 43.3	7 21.0	4.8	2.4	10.8	5.5	16.8	8.5	48	7 57.0	7 58.3	7 35.3	4.8	2.5	10.8	5.7	16.8	8.8
49	7 42.3	7 43.5	7 21.2	4.9	2.5	10.9	5.5	16.9	8.6	49	7 57.3	7 58.6	7 35.5	4.9	2.6	10.9	5.7	16.9	8.9
50	7 42.5	7 43.8	7 21.4	5.0	2.5	11.0	5.6	17.0	8.6	50	7 57.5	7 58.8	7 35.7	5.0	2.6	11.0	5.8	17.0	8.9
51	7 42.8	7 44.0	7 21.7	5.1	2.6	11.1	5.6	17.1	8.7	51	7 57.8	7 59.1	7 36.0	5.1	2.7	11.1	5.8	17.1	9.0
52	7 43.0	7 44.3	7 21.9	5.2	2.6	11.2	5.7	17.2	8.7	52	7 58.0	7 59.3	7 36.2	5.2	2.7	11.2	5.9	17.2	9.0
53	7 43.3	7 44.5	7 22.1	5.3	2.7	11.3	5.7	17.3	8.8	53	7 58.3	7 59.6	7 36.5	5.3	2.8	11.3	5.9	17.3	9.1
54	7 43.5	7 44.8	7 22.4	5.4	2.7	11.4	5.8	17.4	8.8	54	7 58.5	7 59.8	7 36.7	5.4	2.8	11.4	6.0	17.4	9.1
55	7 43.8	7 45.0	7 22.6	5.5	2.8	11.5	5.8	17.5	8.9	55	7 58.8	8 00.1	7 36.9	5.5	2.9	11.5	6.0	17.5	9.2
56	7 44.0	7 45.3	7 22.9	5.6	2.8	11.6	5.9	17.6	8.9	56	7 59.0	8 00.3	7 37.2	5.6	2.9	11.6	6.1	17.6	9.2
57	7 44.3	7 45.5	7 23.1	5.7	2.9	11.7	5.9	17.7	9.0	57	7 59.3	8 00.6	7 37.4	5.7	3.0	11.7	6.1	17.7	9.3
58	7 44.5	7 45.8	7 23.3	5.8	2.9	11.8	6.0	17.8	9.0	58	7 59.5	8 00.8	7 37.7	5.8	3.0	11.8	6.2	17.8	9.3
59	7 44.8	7 46.0	7 23.6	5.9	3.0	11.9	6.0	17.9	9.1	59	7 59.8	8 01.1	7 37.9	5.9	3.1	11.9	6.2	17.9	9.4
60	7 45.0	7 46.3	7 23.8	6.0	3.1	12.0	6.1	18.0	9.2	60	8 00.0	8 01.3	7 38.1	6.0	3.2	12.0	6.3	18.0	9.5

32 ^m	SUN PLANETS	ARIES	MOON	ν or d	Corr ⁿ	ν or d	Corr ⁿ	ν or d	Corr ⁿ	33 ^m	SUN PLANETS	ARIES	MOON	ν or d	Corr ⁿ	ν or d	Corr ⁿ	ν or d	Corr ⁿ
00	8 00.0	8 01.3	7 38.1	0.0	0.0	6.0	3.3	12.0	6.5	00	8 15.0	8 16.4	7 52.5	0.0	0.0	6.0	3.4	12.0	6.7
01	8 00.3	8 01.6	7 38.4	0.1	0.1	6.1	3.3	12.1	6.6	01	8 15.3	8 16.6	7 52.7	0.1	0.1	6.1	3.4	12.1	6.8
02	8 00.5	8 01.8	7 38.6	0.2	0.1	6.2	3.4	12.2	6.6	02	8 15.5	8 16.9	7 52.9	0.2	0.1	6.2	3.5	12.2	6.8
03	8 00.8	8 02.1	7 38.8	0.3	0.2	6.3	3.4	12.3	6.7	03	8 15.8	8 17.1	7 53.2	0.3	0.2	6.3	3.5	12.3	6.9
04	8 01.0	8 02.3	7 39.1	0.4	0.2	6.4	3.5	12.4	6.7	04	8 16.0	8 17.4	7 53.4	0.4	0.2	6.4	3.6	12.4	6.9
05	8 01.3	8 02.6	7 39.3	0.5	0.3	6.5	3.5	12.5	6.8	05	8 16.3	8 17.6	7 53.6	0.5	0.3	6.5	3.6	12.5	7.0
06	8 01.5	8 02.8	7 39.6	0.6	0.3	6.6	3.6	12.6	6.8	06	8 16.5	8 17.9	7 53.9	0.6	0.3	6.6	3.7	12.6	7.0
07	8 01.8	8 03.1	7 39.8	0.7	0.4	6.7	3.6	12.7	6.9	07	8 16.8	8 18.1	7 54.1	0.7	0.4	6.7	3.7	12.7	7.1
08	8 02.0	8 03.3	7 40.0	0.8	0.4	6.8	3.7	12.8	6.9	08	8 17.0	8 18.4	7 54.4	0.8	0.4	6.8	3.8	12.8	7.1
09	8 02.3	8 03.6	7 40.3	0.9	0.5	6.9	3.7	12.9	7.0	09	8 17.3	8 18.6	7 54.6	0.9	0.5	6.9	3.9	12.9	7.2
10	8 02.5	8 03.8	7 40.5	1.0	0.5	7.0	3.8	13.0	7.0	10	8 17.5	8 18.9	7 54.8	1.0	0.6	7.0	3.9	13.0	7.3
11	8 02.8	8 04.1	7 40.8	1.1	0.6	7.1	3.8	13.1	7.1	11	8 17.8	8 19.1	7 55.1	1.1	0.6	7.1	4.0	13.1	7.3
12	8 03.0	8 04.3	7 41.0	1.2	0.7	7.2	3.9	13.2	7.2	12	8 18.0	8 19.4	7 55.3	1.2	0.7	7.2	4.0	13.2	7.4
13	8 03.3	8 04.6	7 41.2	1.3	0.7	7.3	4.0	13.3	7.2	13	8 18.3	8 19.6	7 55.6	1.3	0.7	7.3	4.1	13.3	7.4
14	8 03.5	8 04.8	7 41.5	1.4	0.8	7.4	4.0	13.4	7.3	14	8 18.5	8 19.9	7 55.8	1.4	0.8	7.4	4.1	13.4	7.5
15	8 03.8	8 05.1	7 41.7	1.5	0.8	7.5	4.1	13.5	7.3	15	8 18.8	8 20.1	7 56.0	1.5	0.8	7.5	4.2	13.5	7.5
16	8 04.0	8 05.3	7 42.0	1.6	0.9	7.6	4.1	13.6	7.4	16	8 19.0	8 20.4	7 56.3	1.6	0.9	7.6	4.2	13.6	7.6
17	8 04.3	8 05.6	7 42.2	1.7	0.9	7.7	4.2	13.7	7.4	17	8 19.3	8 20.6	7 56.5	1.7	0.9	7.7	4.3	13.7	7.6
18	8 04.5	8 05.8	7 42.4	1.8	1.0	7.8	4.2	13.8	7.5	18	8 19.5	8 20.9	7 56.7	1.8	1.0	7.8	4.4	13.8	7.7
19	8 04.8	8 06.1	7 42.7	1.9	1.0	7.9	4.3	13.9	7.5	19	8 19.8	8 21.1	7 57.0	1.9	1.1	7.9	4.4	13.9	7.8
20	8 05.0	8 06.3	7 42.9	2.0	1.1	8.0	4.3	14.0	7.6	20	8 20.0	8 21.4	7 57.2	2.0	1.1	8.0	4.5	14.0	7.8
21	8 05.3	8 06.6	7 43.1	2.1	1.1	8.1	4.4	14.1	7.6	21	8 20.3	8 21.6	7 57.5	2.1	1.2	8.1	4.5	14.1	7.9
22	8 05.5	8 06.8	7 43.4	2.2	1.2	8.2	4.4	14.2	7.7	22	8 20.5	8 21.9	7 57.7	2.2	1.2	8.2	4.6	14.2	7.9
23	8 05.8	8 07.1	7 43.6	2.3	1.2	8.3	4.5	14.3	7.7	23	8 20.8	8 22.1	7 57.9	2.3	1.3	8.3	4.6	14.3	8.0
24	8 06.0	8 07.3	7 43.9	2.4	1.3	8.4	4.6	14.4	7.8	24	8 21.0	8 22.4	7 58.2	2.4	1.3	8.4	4.7	14.4	8.0
25	8 06.3	8 07.6	7 44.1	2.5	1.4	8.5	4.6	14.5	7.9	25	8 21.3	8 22.6	7 58.4	2.5	1.4	8.5	4.7	14.5	8.1
26	8 06.5	8 07.8	7 44.3	2.6	1.4	8.6	4.7	14.6	7.9	26	8 21.5	8 22.9	7 58.7	2.6	1.5	8.6	4.8	14.6	8.2
27	8 06.8	8 08.1	7 44.6	2.7	1.5	8.7	4.7	14.7	8.0	27	8 21.8	8 23.1	7 58.9	2.7	1.5	8.7	4.9	14.7	8.2
28	8 07.0	8 08.3	7 44.8	2.8	1.5	8.8	4.8	14.8	8.0	28	8 22.0	8 23.4	7 59.1	2.8	1.6	8.8	4.9	14.8	8.3
29	8 07.3	8 08.6	7 45.1	2.9	1.6	8.9	4.8	14.9	8.1	29	8 22.3	8 23.6	7 59.4	2.9	1.6	8.9	5.0	14.9	8.3
30	8 07.5	8 08.8	7 45.3	3.0	1.6	9.0	4.9	15.0	8.1	30	8 22.5	8 23.9	7 59.6	3.0	1.7	9.0	5.0	15.0	8.4
31	8 07.8	8 09.1	7 45.5	3.1	1.7	9.1	4.9	15.1	8.2	31	8 22.8	8 24.1	7 59.8	3.1	1.7	9.1	5.1	15.1	8.4
32	8 08.0	8 09.3	7 45.8	3.2	1.7	9.2	5.0	15.2	8.2	32	8 23.0	8 24.4	8 00.1	3.2	1.8	9.2	5.1	15.2	8.5
33	8 08.3	8 09.6	7 46.0	3.3	1.8	9.3	5.0	15.3	8.3	33	8 23.3	8 24.6	8 00.3	3.3	1.8	9.3	5.2	15.3	8.5
34	8 08.5	8 09.8	7 46.2	3.4	1.8	9.4	5.1	15.4	8.3	34	8 23.5	8 24.9	8 00.6	3.4	1.9	9.4	5.2	15.4	8.6
35	8 08.8	8 10.1	7 46.5	3.5	1.9	9.5	5.1	15.5	8.4	35	8 23.8	8 25.1	8 00.8	3.5	2.0	9.5	5.3	15.5	8.7
36	8 09.0	8 10.3	7 46.7	3.6	2.0	9.6	5.2	15.6	8.5	36	8 24.0	8 25.4	8 01.0	3.6	2.0	9.6	5.4	15.6	8.7
37	8 09.3	8 10.6	7 47.0	3.7	2.0	9.7	5.3	15.7	8.5	37	8 24.3	8 25.6	8 01.3	3.7	2.1	9.7	5.4	15.7	8.8
38	8 09.5	8 10.8	7 47.2	3.8	2.1	9.8	5.3	15.8	8.6	38	8 24.5	8 25.9	8 01.5	3.8	2.1	9.8	5.5	15.8	8.8
39	8 09.8	8 11.1	7 47.4	3.9	2.1	9.9	5.4	15.9	8.6	39	8 24.8	8 26.1	8 01.8	3.9	2.2	9.9	5.5	15.9	8.9
40	8 10.0	8 11.3	7 47.7	4.0	2.2	10.0	5.4	16.0	8.7	40	8 25.0	8 26.4	8 02.0	4.0	2.2	10.0	5.6	16.0	8.9
41	8 10.3	8 11.6	7 47.9	4.1	2.2	10.1	5.5	16.1	8.7	41	8 25.3	8 26.6	8 02.2	4.1	2.3	10.1	5.6	16.1	9.0
42	8 10.5	8 11.8	7 48.2	4.2	2.3	10.2	5.5	16.2	8.8	42	8 25.5	8 26.9	8 02.5	4.2	2.3	10.2	5.7	16.2	9.0
43	8 10.8	8 12.1	7 48.4	4.3	2.3	10.3	5.6	16.3	8.8	43	8 25.8	8 27.1	8 02.7	4.3	2.4	10.3	5.8	16.3	9.1
44	8 11.0	8 12.3	7 48.6	4.4	2.4	10.4	5.6	16.4	8.9	44	8 26.0	8 27.4	8 02.9	4.4	2.5	10.4	5.8	16.4	9.2
45	8 11.3	8 12.6	7 48.9	4.5	2.4	10.5	5.7	16.5	8.9	45	8 26.3	8 27.6	8 03.2	4.5	2.5	10.5	5.9	16.5	9.2
46	8 11.5	8 12.8	7 49.1	4.6	2.5	10.6	5.7	16.6	9.0	46	8 26.5	8 27.9	8 03.4	4.6	2.6	10.6	5.9	16.6	9.3
47	8 11.8	8 13.1	7 49.3	4.7	2.5	10.7	5.8	16.7	9.0	47	8 26.8	8 28.1	8 03.7	4.7	2.6	10.7	6.0	16.7	9.3
48	8 12.0	8 13.3	7 49.6	4.8	2.6	10.8	5.9	16.8	9.1	48	8 27.0	8 28.4	8 03.9	4.8	2.7	10.8	6.0	16.8	9.4
49	8 12.3	8 13.6	7 49.8	4.9	2.7	10.9	5.9	16.9	9.2	49	8 27.3	8 28.6	8 04.1	4.9	2.7	10.9	6.1	16.9	9.4
50	8 12.5	8 13.8	7 50.1	5.0	2.7	11.0	6.0	17.0	9.2	50	8 27.5	8 28.9	8 04.4	5.0	2.8	11.0	6.1	17.0	9.5
51	8 12.8	8 14.1	7 50.3	5.1	2.8	11.1	6.0	17.1	9.3	51	8 27.8	8 29.1	8 04.6	5.1	2.8	11.1	6.2	17.1	9.5
52	8 13.0	8 14.3	7 50.5	5.2	2.8	11.2	6.1	17.2	9.3	52	8 28.0	8 29.4	8 04.9	5.2	2.9	11.2	6.3	17.2	9.6
53	8 13.3	8 14.6	7 50.8	5.3	2.9	11.3	6.1	17.3	9.4	53	8 28.3	8 29.6	8 05.1	5.3	3.0	11.3	6.3	17.3	9.7
54	8 13.5	8 14.9	7 51.0	5.4	2.9	11.4	6.2	17.4	9.4	54	8 28.5	8 29.9	8 05.3	5.4	3.0	11.4	6.4	17.4	9.7
55	8 13.8	8 15.1	7 51.3	5.5	3.0	11.5	6.2	17.5	9.5	55	8 28.8	8 30.1	8 05.6	5.5	3.1	11.5	6.4	17.5	9.8
56	8 14.0	8 15.4	7 51.5	5.6	3.0	11.6	6.3	17.6	9.5	56	8 29.0	8 30.4	8 05.8	5.6	3.1	11.6	6.5	17.6	9.8
57	8 14.3	8 15.6	7 51.7	5.7	3.1	11.7	6.3	17.7	9.6	57	8 29.3	8 30.6	8 06.1	5.7	3.2	11.7	6.5	17.7	9.9
58	8 14.5	8 15.9	7 52.0	5.8	3.1	11.8	6.4	17.8	9.6	58	8 29.5	8 30.9	8 06.3	5.8	3.2	11.8	6.6	17.8	9.9
59	8 14.8	8 16.1	7 52.2	5.9	3.2	11.9	6.4	17.9	9.7	59	8 29.8	8 31.1	8 06.5	5.9	3.3	11.9	6.6	17.9	10.0
60	8 15.0	8 16.4	7 52.5	6.0	3.3	12.0	6.5	18.0	9.8	60	8 30.0	8 31.4	8 06.8	6.0	3.4	12.0	6.7	18.0	10.1

34 ^m	SUN PLANETS	ARIES	MOON	v or d	Corr ⁿ	v or d	Corr ⁿ	v or d	Corr ⁿ	35 ^m	SUN PLANETS	ARIES	MOON	v or d	Corr ⁿ	v or d	Corr ⁿ	v or d	Corr ⁿ
00	8 30.0	8 31.4	8 06.8	0.0	0.0	6.0	3.5	12.0	6.9	00	8 45.0	8 46.4	8 21.1	0.0	0.0	6.0	3.6	12.0	7.1
01	8 30.3	8 31.6	8 07.0	0.1	0.1	6.1	3.5	12.1	7.0	01	8 45.3	8 46.7	8 21.3	0.1	0.1	6.1	3.6	12.1	7.2
02	8 30.5	8 31.9	8 07.2	0.2	0.1	6.2	3.6	12.2	7.0	02	8 45.5	8 46.9	8 21.6	0.2	0.1	6.2	3.7	12.2	7.2
03	8 30.8	8 32.1	8 07.5	0.3	0.2	6.3	3.6	12.3	7.1	03	8 45.8	8 47.2	8 21.8	0.3	0.2	6.3	3.7	12.3	7.3
04	8 31.0	8 32.4	8 07.7	0.4	0.2	6.4	3.7	12.4	7.1	04	8 46.0	8 47.4	8 22.0	0.4	0.2	6.4	3.8	12.4	7.3
05	8 31.3	8 32.6	8 08.0	0.5	0.3	6.5	3.7	12.5	7.2	05	8 46.3	8 47.7	8 22.3	0.5	0.3	6.5	3.8	12.5	7.4
06	8 31.5	8 32.9	8 08.2	0.6	0.3	6.6	3.8	12.6	7.2	06	8 46.5	8 47.9	8 22.5	0.6	0.4	6.6	3.9	12.6	7.5
07	8 31.8	8 33.2	8 08.4	0.7	0.4	6.7	3.9	12.7	7.3	07	8 46.8	8 48.2	8 22.8	0.7	0.4	6.7	4.0	12.7	7.5
08	8 32.0	8 33.4	8 08.7	0.8	0.5	6.8	3.9	12.8	7.4	08	8 47.0	8 48.4	8 23.0	0.8	0.5	6.8	4.0	12.8	7.6
09	8 32.3	8 33.7	8 08.9	0.9	0.5	6.9	4.0	12.9	7.4	09	8 47.3	8 48.7	8 23.2	0.9	0.5	6.9	4.1	12.9	7.6
10	8 32.5	8 33.9	8 09.2	1.0	0.6	7.0	4.0	13.0	7.5	10	8 47.5	8 48.9	8 23.5	1.0	0.6	7.0	4.1	13.0	7.7
11	8 32.8	8 34.2	8 09.4	1.1	0.6	7.1	4.1	13.1	7.5	11	8 47.8	8 49.2	8 23.7	1.1	0.7	7.1	4.2	13.1	7.8
12	8 33.0	8 34.4	8 09.6	1.2	0.7	7.2	4.1	13.2	7.6	12	8 48.0	8 49.4	8 23.9	1.2	0.7	7.2	4.3	13.2	7.8
13	8 33.3	8 34.7	8 09.9	1.3	0.7	7.3	4.2	13.3	7.6	13	8 48.3	8 49.7	8 24.2	1.3	0.8	7.3	4.3	13.3	7.9
14	8 33.5	8 34.9	8 10.1	1.4	0.8	7.4	4.3	13.4	7.7	14	8 48.5	8 49.9	8 24.4	1.4	0.8	7.4	4.4	13.4	7.9
15	8 33.8	8 35.2	8 10.3	1.5	0.9	7.5	4.3	13.5	7.8	15	8 48.8	8 50.2	8 24.7	1.5	0.9	7.5	4.4	13.5	8.0
16	8 34.0	8 35.4	8 10.6	1.6	0.9	7.6	4.4	13.6	7.8	16	8 49.0	8 50.4	8 24.9	1.6	0.9	7.6	4.5	13.6	8.0
17	8 34.3	8 35.7	8 10.8	1.7	1.0	7.7	4.4	13.7	7.9	17	8 49.3	8 50.7	8 25.1	1.7	1.0	7.7	4.6	13.7	8.1
18	8 34.5	8 35.9	8 11.1	1.8	1.0	7.8	4.5	13.8	7.9	18	8 49.5	8 50.9	8 25.4	1.8	1.1	7.8	4.6	13.8	8.2
19	8 34.8	8 36.2	8 11.3	1.9	1.1	7.9	4.5	13.9	8.0	19	8 49.8	8 51.2	8 25.6	1.9	1.1	7.9	4.7	13.9	8.2
20	8 35.0	8 36.4	8 11.5	2.0	1.2	8.0	4.6	14.0	8.1	20	8 50.0	8 51.5	8 25.9	2.0	1.2	8.0	4.7	14.0	8.3
21	8 35.3	8 36.7	8 11.8	2.1	1.2	8.1	4.7	14.1	8.1	21	8 50.3	8 51.7	8 26.1	2.1	1.2	8.1	4.8	14.1	8.3
22	8 35.5	8 36.9	8 12.0	2.2	1.3	8.2	4.7	14.2	8.2	22	8 50.5	8 52.0	8 26.3	2.2	1.3	8.2	4.9	14.2	8.4
23	8 35.8	8 37.2	8 12.3	2.3	1.3	8.3	4.8	14.3	8.2	23	8 50.8	8 52.2	8 26.6	2.3	1.4	8.3	4.9	14.3	8.5
24	8 36.0	8 37.4	8 12.5	2.4	1.4	8.4	4.8	14.4	8.3	24	8 51.0	8 52.5	8 26.8	2.4	1.4	8.4	5.0	14.4	8.5
25	8 36.3	8 37.7	8 12.7	2.5	1.4	8.5	4.9	14.5	8.3	25	8 51.3	8 52.7	8 27.0	2.5	1.5	8.5	5.0	14.5	8.6
26	8 36.5	8 37.9	8 13.0	2.6	1.5	8.6	4.9	14.6	8.4	26	8 51.5	8 53.0	8 27.3	2.6	1.5	8.6	5.1	14.6	8.6
27	8 36.8	8 38.2	8 13.2	2.7	1.6	8.7	5.0	14.7	8.5	27	8 51.8	8 53.2	8 27.5	2.7	1.6	8.7	5.1	14.7	8.7
28	8 37.0	8 38.4	8 13.4	2.8	1.6	8.8	5.1	14.8	8.5	28	8 52.0	8 53.5	8 27.8	2.8	1.7	8.8	5.2	14.8	8.8
29	8 37.3	8 38.7	8 13.7	2.9	1.7	8.9	5.1	14.9	8.6	29	8 52.3	8 53.7	8 28.0	2.9	1.7	8.9	5.3	14.9	8.8
30	8 37.5	8 38.9	8 13.9	3.0	1.7	9.0	5.2	15.0	8.6	30	8 52.5	8 54.0	8 28.2	3.0	1.8	9.0	5.3	15.0	8.9
31	8 37.8	8 39.2	8 14.2	3.1	1.8	9.1	5.2	15.1	8.7	31	8 52.8	8 54.2	8 28.5	3.1	1.8	9.1	5.4	15.1	8.9
32	8 38.0	8 39.4	8 14.4	3.2	1.8	9.2	5.3	15.2	8.7	32	8 53.0	8 54.5	8 28.7	3.2	1.9	9.2	5.4	15.2	9.0
33	8 38.3	8 39.7	8 14.6	3.3	1.9	9.3	5.3	15.3	8.8	33	8 53.3	8 54.7	8 29.0	3.3	2.0	9.3	5.5	15.3	9.1
34	8 38.5	8 39.9	8 14.9	3.4	2.0	9.4	5.4	15.4	8.9	34	8 53.5	8 55.0	8 29.2	3.4	2.0	9.4	5.6	15.4	9.1
35	8 38.8	8 40.2	8 15.1	3.5	2.0	9.5	5.5	15.5	8.9	35	8 53.8	8 55.2	8 29.4	3.5	2.1	9.5	5.6	15.5	9.2
36	8 39.0	8 40.4	8 15.4	3.6	2.1	9.6	5.5	15.6	9.0	36	8 54.0	8 55.5	8 29.7	3.6	2.1	9.6	5.7	15.6	9.2
37	8 39.3	8 40.7	8 15.6	3.7	2.1	9.7	5.6	15.7	9.0	37	8 54.3	8 55.7	8 29.9	3.7	2.2	9.7	5.7	15.7	9.3
38	8 39.5	8 40.9	8 15.8	3.8	2.2	9.8	5.6	15.8	9.1	38	8 54.5	8 56.0	8 30.2	3.8	2.2	9.8	5.8	15.8	9.3
39	8 39.8	8 41.2	8 16.1	3.9	2.2	9.9	5.7	15.9	9.1	39	8 54.8	8 56.2	8 30.4	3.9	2.3	9.9	5.9	15.9	9.4
40	8 40.0	8 41.4	8 16.3	4.0	2.3	10.0	5.8	16.0	9.2	40	8 55.0	8 56.5	8 30.6	4.0	2.4	10.0	5.9	16.0	9.5
41	8 40.3	8 41.7	8 16.5	4.1	2.4	10.1	5.8	16.1	9.3	41	8 55.3	8 56.7	8 30.9	4.1	2.4	10.1	6.0	16.1	9.5
42	8 40.5	8 41.9	8 16.8	4.2	2.4	10.2	5.9	16.2	9.3	42	8 55.5	8 57.0	8 31.1	4.2	2.5	10.2	6.0	16.2	9.6
43	8 40.8	8 42.2	8 17.0	4.3	2.5	10.3	5.9	16.3	9.4	43	8 55.8	8 57.2	8 31.3	4.3	2.5	10.3	6.1	16.3	9.6
44	8 41.0	8 42.4	8 17.3	4.4	2.5	10.4	6.0	16.4	9.4	44	8 56.0	8 57.5	8 31.6	4.4	2.6	10.4	6.2	16.4	9.7
45	8 41.3	8 42.7	8 17.5	4.5	2.6	10.5	6.0	16.5	9.5	45	8 56.3	8 57.7	8 31.8	4.5	2.7	10.5	6.2	16.5	9.8
46	8 41.5	8 42.9	8 17.7	4.6	2.6	10.6	6.1	16.6	9.5	46	8 56.5	8 58.0	8 32.1	4.6	2.7	10.6	6.3	16.6	9.8
47	8 41.8	8 43.2	8 18.0	4.7	2.7	10.7	6.2	16.7	9.6	47	8 56.8	8 58.2	8 32.3	4.7	2.8	10.7	6.3	16.7	9.9
48	8 42.0	8 43.4	8 18.2	4.8	2.8	10.8	6.2	16.8	9.7	48	8 57.0	8 58.5	8 32.5	4.8	2.8	10.8	6.4	16.8	9.9
49	8 42.3	8 43.7	8 18.5	4.9	2.8	10.9	6.3	16.9	9.7	49	8 57.3	8 58.7	8 32.8	4.9	2.9	10.9	6.4	16.9	10.0
50	8 42.5	8 43.9	8 18.7	5.0	2.9	11.0	6.3	17.0	9.8	50	8 57.5	8 59.0	8 33.0	5.0	3.0	11.0	6.5	17.0	10.1
51	8 42.8	8 44.2	8 18.9	5.1	2.9	11.1	6.4	17.1	9.8	51	8 57.8	8 59.2	8 33.3	5.1	3.0	11.1	6.6	17.1	10.1
52	8 43.0	8 44.4	8 19.2	5.2	3.0	11.2	6.4	17.2	9.9	52	8 58.0	8 59.5	8 33.5	5.2	3.1	11.2	6.6	17.2	10.2
53	8 43.3	8 44.7	8 19.4	5.3	3.0	11.3	6.5	17.3	9.9	53	8 58.3	8 59.7	8 33.7	5.3	3.1	11.3	6.7	17.3	10.2
54	8 43.5	8 44.9	8 19.7	5.4	3.1	11.4	6.6	17.4	10.0	54	8 58.5	9 00.0	8 34.0	5.4	3.2	11.4	6.7	17.4	10.3
55	8 43.8	8 45.2	8 19.9	5.5	3.2	11.5	6.6	17.5	10.1	55	8 58.8	9 00.2	8 34.2	5.5	3.3	11.5	6.8	17.5	10.4
56	8 44.0	8 45.4	8 20.1	5.6	3.2	11.6	6.7	17.6	10.1	56	8 59.0	9 00.5	8 34.4	5.6	3.3	11.6	6.9	17.6	10.4
57	8 44.3	8 45.7	8 20.4	5.7	3.3	11.7	6.7	17.7	10.2	57	8 59.3	9 00.7	8 34.7	5.7	3.4	11.7	6.9	17.7	10.5
58	8 44.5	8 45.9	8 20.6	5.8	3.3	11.8	6.8	17.8	10.2	58	8 59.5	9 01.0	8 34.9	5.8	3.4	11.8	7.0	17.8	10.5
59	8 44.8	8 46.2	8 20.8	5.9	3.4	11.9	6.8	17.9	10.3	59	8 59.8	9 01.2	8 35.2	5.9	3.5	11.9	7.0	17.9	10.6
60	8 45.0	8 46.4	8 21.1	6.0	3.5	12.0	6.9	18.0	10.4	60	9 00.0	9 01.5	8 35.4	6.0	3.6	12.0	7.1	18.0	10.7

36 ^m	SUN PLANETS	ARIES	MOON	$\frac{v}{d}$ or Corr ⁿ	$\frac{v}{d}$ or Corr ⁿ	$\frac{v}{d}$ or Corr ⁿ	37 ^m	SUN PLANETS	ARIES	MOON	$\frac{v}{d}$ or Corr ⁿ	$\frac{v}{d}$ or Corr ⁿ	$\frac{v}{d}$ or Corr ⁿ						
s	c	c	c	d	d	d	s	c	c	c	d	d	d						
00	9 00.0	9 01.5	8 35.4	0.0	0.0	6.0	3.7	12.0	7.3	00	9 15.0	9 16.5	8 49.7	0.0	0.0	6.0	3.8	12.0	7.5
01	9 00.3	9 01.7	8 35.6	0.1	0.1	6.1	3.7	12.1	7.4	01	9 15.3	9 16.8	8 50.0	0.1	0.1	6.1	3.8	12.1	7.6
02	9 00.5	9 02.0	8 35.9	0.2	0.1	6.2	3.8	12.2	7.4	02	9 15.5	9 17.0	8 50.2	0.2	0.1	6.2	3.9	12.2	7.6
03	9 00.8	9 02.2	8 36.1	0.3	0.2	6.3	3.8	12.3	7.5	03	9 15.8	9 17.3	8 50.4	0.3	0.2	6.3	3.9	12.3	7.7
04	9 01.0	9 02.5	8 36.4	0.4	0.2	6.4	3.9	12.4	7.5	04	9 16.0	9 17.5	8 50.7	0.4	0.3	6.4	4.0	12.4	7.8
05	9 01.3	9 02.7	8 36.6	0.5	0.3	6.5	4.0	12.5	7.6	05	9 16.3	9 17.8	8 50.9	0.5	0.3	6.5	4.1	12.5	7.8
06	9 01.5	9 03.0	8 36.8	0.6	0.4	6.6	4.0	12.6	7.7	06	9 16.5	9 18.0	8 51.1	0.6	0.4	6.6	4.1	12.6	7.9
07	9 01.8	9 03.2	8 37.1	0.7	0.4	6.7	4.1	12.7	7.7	07	9 16.8	9 18.3	8 51.4	0.7	0.4	6.7	4.2	12.7	7.9
08	9 02.0	9 03.5	8 37.3	0.8	0.5	6.8	4.1	12.8	7.8	08	9 17.0	9 18.5	8 51.6	0.8	0.5	6.8	4.3	12.8	8.0
09	9 02.3	9 03.7	8 37.5	0.9	0.5	6.9	4.2	12.9	7.8	09	9 17.3	9 18.8	8 51.9	0.9	0.6	6.9	4.3	12.9	8.1
10	9 02.5	9 04.0	8 37.8	1.0	0.6	7.0	4.3	13.0	7.9	10	9 17.5	9 19.0	8 52.1	1.0	0.6	7.0	4.4	13.0	8.1
11	9 02.8	9 04.2	8 38.0	1.1	0.7	7.1	4.3	13.1	8.0	11	9 17.8	9 19.3	8 52.3	1.1	0.7	7.1	4.4	13.1	8.2
12	9 03.0	9 04.5	8 38.3	1.2	0.7	7.2	4.4	13.2	8.0	12	9 18.0	9 19.5	8 52.6	1.2	0.8	7.2	4.5	13.2	8.3
13	9 03.3	9 04.7	8 38.5	1.3	0.8	7.3	4.4	13.3	8.1	13	9 18.3	9 19.8	8 52.8	1.3	0.8	7.3	4.6	13.3	8.3
14	9 03.5	9 05.0	8 38.7	1.4	0.9	7.4	4.5	13.4	8.2	14	9 18.5	9 20.0	8 53.1	1.4	0.9	7.4	4.6	13.4	8.4
15	9 03.8	9 05.2	8 39.0	1.5	0.9	7.5	4.6	13.5	8.2	15	9 18.8	9 20.3	8 53.3	1.5	0.9	7.5	4.7	13.5	8.4
16	9 04.0	9 05.5	8 39.2	1.6	1.0	7.6	4.6	13.6	8.3	16	9 19.0	9 20.5	8 53.5	1.6	1.0	7.6	4.8	13.6	8.5
17	9 04.3	9 05.7	8 39.5	1.7	1.0	7.7	4.7	13.7	8.3	17	9 19.3	9 20.8	8 53.8	1.7	1.1	7.7	4.8	13.7	8.6
18	9 04.5	9 06.0	8 39.7	1.8	1.1	7.8	4.7	13.8	8.4	18	9 19.5	9 21.0	8 54.0	1.8	1.1	7.8	4.9	13.8	8.6
19	9 04.8	9 06.2	8 39.9	1.9	1.2	7.9	4.8	13.9	8.5	19	9 19.8	9 21.3	8 54.3	1.9	1.2	7.9	4.9	13.9	8.7
20	9 05.0	9 06.5	8 40.2	2.0	1.2	8.0	4.9	14.0	8.5	20	9 20.0	9 21.5	8 54.5	2.0	1.3	8.0	5.0	14.0	8.8
21	9 05.3	9 06.7	8 40.4	2.1	1.3	8.1	4.9	14.1	8.6	21	9 20.3	9 21.8	8 54.7	2.1	1.3	8.1	5.1	14.1	8.8
22	9 05.5	9 07.0	8 40.6	2.2	1.3	8.2	5.0	14.2	8.6	22	9 20.5	9 22.0	8 55.0	2.2	1.4	8.2	5.1	14.2	8.9
23	9 05.8	9 07.2	8 40.9	2.3	1.4	8.3	5.0	14.3	8.7	23	9 20.8	9 22.3	8 55.2	2.3	1.4	8.3	5.2	14.3	8.9
24	9 06.0	9 07.5	8 41.1	2.4	1.5	8.4	5.1	14.4	8.8	24	9 21.0	9 22.5	8 55.4	2.4	1.5	8.4	5.3	14.4	9.0
25	9 06.3	9 07.7	8 41.4	2.5	1.5	8.5	5.2	14.5	8.8	25	9 21.3	9 22.8	8 55.7	2.5	1.6	8.5	5.3	14.5	9.1
26	9 06.5	9 08.0	8 41.6	2.6	1.6	8.6	5.2	14.6	8.9	26	9 21.5	9 23.0	8 55.9	2.6	1.6	8.6	5.4	14.6	9.1
27	9 06.8	9 08.2	8 41.8	2.7	1.6	8.7	5.3	14.7	8.9	27	9 21.8	9 23.3	8 56.2	2.7	1.7	8.7	5.4	14.7	9.2
28	9 07.0	9 08.5	8 42.1	2.8	1.7	8.8	5.4	14.8	9.0	28	9 22.0	9 23.5	8 56.4	2.8	1.8	8.8	5.5	14.8	9.3
29	9 07.3	9 08.7	8 42.3	2.9	1.8	8.9	5.4	14.9	9.1	29	9 22.3	9 23.8	8 56.6	2.9	1.8	8.9	5.6	14.9	9.3
30	9 07.5	9 09.0	8 42.6	3.0	1.8	9.0	5.5	15.0	9.1	30	9 22.5	9 24.0	8 56.9	3.0	1.9	9.0	5.6	15.0	9.4
31	9 07.8	9 09.2	8 42.8	3.1	1.9	9.1	5.5	15.1	9.2	31	9 22.8	9 24.3	8 57.1	3.1	1.9	9.1	5.7	15.1	9.4
32	9 08.0	9 09.5	8 43.0	3.2	1.9	9.2	5.6	15.2	9.2	32	9 23.0	9 24.5	8 57.4	3.2	2.0	9.2	5.8	15.2	9.5
33	9 08.3	9 09.8	8 43.3	3.3	2.0	9.3	5.7	15.3	9.3	33	9 23.3	9 24.8	8 57.6	3.3	2.1	9.3	5.8	15.3	9.6
34	9 08.5	9 10.0	8 43.5	3.4	2.1	9.4	5.7	15.4	9.4	34	9 23.5	9 25.0	8 57.8	3.4	2.1	9.4	5.9	15.4	9.6
35	9 08.8	9 10.3	8 43.8	3.5	2.1	9.5	5.8	15.5	9.4	35	9 23.8	9 25.3	8 58.1	3.5	2.2	9.5	5.9	15.5	9.7
36	9 09.0	9 10.5	8 44.0	3.6	2.2	9.6	5.8	15.6	9.5	36	9 24.0	9 25.5	8 58.3	3.6	2.3	9.6	6.0	15.6	9.8
37	9 09.3	9 10.8	8 44.2	3.7	2.3	9.7	5.9	15.7	9.6	37	9 24.3	9 25.8	8 58.5	3.7	2.3	9.7	6.1	15.7	9.8
38	9 09.5	9 11.0	8 44.5	3.8	2.3	9.8	6.0	15.8	9.6	38	9 24.5	9 26.0	8 58.8	3.8	2.4	9.8	6.1	15.8	9.9
39	9 09.8	9 11.3	8 44.7	3.9	2.4	9.9	6.0	15.9	9.7	39	9 24.8	9 26.3	8 59.0	3.9	2.4	9.9	6.2	15.9	9.9
40	9 10.0	9 11.5	8 44.9	4.0	2.4	10.0	6.1	16.0	9.7	40	9 25.0	9 26.5	8 59.3	4.0	2.5	10.0	6.3	16.0	10.0
41	9 10.3	9 11.8	8 45.2	4.1	2.5	10.1	6.1	16.1	9.8	41	9 25.3	9 26.8	8 59.5	4.1	2.6	10.1	6.3	16.1	10.1
42	9 10.5	9 12.0	8 45.4	4.2	2.6	10.2	6.2	16.2	9.9	42	9 25.5	9 27.0	8 59.7	4.2	2.6	10.2	6.4	16.2	10.1
43	9 10.8	9 12.3	8 45.7	4.3	2.6	10.3	6.3	16.3	9.9	43	9 25.8	9 27.3	9 00.0	4.3	2.7	10.3	6.4	16.3	10.2
44	9 11.0	9 12.5	8 45.9	4.4	2.7	10.4	6.3	16.4	10.0	44	9 26.0	9 27.5	9 00.2	4.4	2.8	10.4	6.5	16.4	10.3
45	9 11.3	9 12.8	8 46.1	4.5	2.7	10.5	6.4	16.5	10.0	45	9 26.3	9 27.8	9 00.5	4.5	2.8	10.5	6.6	16.5	10.3
46	9 11.5	9 13.0	8 46.4	4.6	2.8	10.6	6.4	16.6	10.1	46	9 26.5	9 28.1	9 00.7	4.6	2.9	10.6	6.6	16.6	10.4
47	9 11.8	9 13.3	8 46.6	4.7	2.9	10.7	6.5	16.7	10.2	47	9 26.8	9 28.3	9 00.9	4.7	2.9	10.7	6.7	16.7	10.4
48	9 12.0	9 13.5	8 46.9	4.8	2.9	10.8	6.6	16.8	10.2	48	9 27.0	9 28.6	9 01.2	4.8	3.0	10.8	6.8	16.8	10.5
49	9 12.3	9 13.8	8 47.1	4.9	3.0	10.9	6.6	16.9	10.3	49	9 27.3	9 28.8	9 01.4	4.9	3.1	10.9	6.8	16.9	10.6
50	9 12.5	9 14.0	8 47.3	5.0	3.0	11.0	6.7	17.0	10.3	50	9 27.5	9 29.1	9 01.6	5.0	3.1	11.0	6.9	17.0	10.6
51	9 12.8	9 14.3	8 47.6	5.1	3.1	11.1	6.8	17.1	10.4	51	9 27.8	9 29.3	9 01.9	5.1	3.2	11.1	6.9	17.1	10.7
52	9 13.0	9 14.5	8 47.8	5.2	3.2	11.2	6.8	17.2	10.5	52	9 28.0	9 29.6	9 02.1	5.2	3.3	11.2	7.0	17.2	10.8
53	9 13.3	9 14.8	8 48.0	5.3	3.2	11.3	6.9	17.3	10.5	53	9 28.3	9 29.8	9 02.4	5.3	3.3	11.3	7.1	17.3	10.8
54	9 13.5	9 15.0	8 48.3	5.4	3.3	11.4	6.9	17.4	10.6	54	9 28.5	9 30.1	9 02.6	5.4	3.4	11.4	7.1	17.4	10.9
55	9 13.8	9 15.3	8 48.5	5.5	3.3	11.5	7.0	17.5	10.6	55	9 28.8	9 30.3	9 02.8	5.5	3.4	11.5	7.2	17.5	10.9
56	9 14.0	9 15.5	8 48.8	5.6	3.4	11.6	7.1	17.6	10.7	56	9 29.0	9 30.6	9 03.1	5.6	3.5	11.6	7.3	17.6	11.0
57	9 14.3	9 15.8	8 49.0	5.7	3.5	11.7	7.1	17.7	10.8	57	9 29.3	9							

38 ^m	SUN PLANETS	ARIES	MOON	v or d	Corr ⁿ	v or d	Corr ⁿ	v or d	Corr ⁿ	39 ^m	SUN PLANETS	ARIES	MOON	v or d	Corr ⁿ	v or d	Corr ⁿ	v or d	Corr ⁿ
s	o	i	o	i	o	i	o	i	o	s	o	i	o	i	o	i	o	i	o
00	9 30.0	9 31.6	9 04.0	0.0	0.0	6.0	3.9	12.0	7.7	00	9 45.0	9 46.6	9 18.4	0.0	0.0	6.0	4.0	12.0	7.9
01	9 30.3	9 31.8	9 04.3	0.1	0.1	6.1	3.9	12.1	7.8	01	9 45.3	9 46.9	9 18.6	0.1	0.1	6.1	4.0	12.1	8.0
02	9 30.5	9 32.1	9 04.5	0.2	0.1	6.2	4.0	12.2	7.8	02	9 45.5	9 47.1	9 18.8	0.2	0.1	6.2	4.1	12.2	8.0
03	9 30.8	9 32.3	9 04.7	0.3	0.2	6.3	4.0	12.3	7.9	03	9 45.8	9 47.4	9 19.1	0.3	0.2	6.3	4.1	12.3	8.1
04	9 31.0	9 32.6	9 05.0	0.4	0.3	6.4	4.1	12.4	8.0	04	9 46.0	9 47.6	9 19.3	0.4	0.3	6.4	4.2	12.4	8.2
05	9 31.3	9 32.8	9 05.2	0.5	0.3	6.5	4.2	12.5	8.0	05	9 46.3	9 47.9	9 19.5	0.5	0.3	6.5	4.3	12.5	8.2
06	9 31.5	9 33.1	9 05.5	0.6	0.4	6.6	4.2	12.6	8.1	06	9 46.5	9 48.1	9 19.8	0.6	0.4	6.6	4.3	12.6	8.3
07	9 31.8	9 33.3	9 05.7	0.7	0.4	6.7	4.3	12.7	8.1	07	9 46.8	9 48.4	9 20.0	0.7	0.5	6.7	4.4	12.7	8.4
08	9 32.0	9 33.6	9 05.9	0.8	0.5	6.8	4.4	12.8	8.2	08	9 47.0	9 48.6	9 20.3	0.8	0.5	6.8	4.5	12.8	8.4
09	9 32.3	9 33.8	9 06.2	0.9	0.6	6.9	4.4	12.9	8.3	09	9 47.3	9 48.9	9 20.5	0.9	0.6	6.9	4.5	12.9	8.5
10	9 32.5	9 34.1	9 06.4	1.0	0.6	7.0	4.5	13.0	8.3	10	9 47.5	9 49.1	9 20.7	1.0	0.7	7.0	4.6	13.0	8.6
11	9 32.8	9 34.3	9 06.7	1.1	0.7	7.1	4.6	13.1	8.4	11	9 47.8	9 49.4	9 21.0	1.1	0.7	7.1	4.7	13.1	8.6
12	9 33.0	9 34.6	9 06.9	1.2	0.8	7.2	4.6	13.2	8.5	12	9 48.0	9 49.6	9 21.2	1.2	0.8	7.2	4.7	13.2	8.7
13	9 33.3	9 34.8	9 07.1	1.3	0.8	7.3	4.7	13.3	8.5	13	9 48.3	9 49.9	9 21.5	1.3	0.9	7.3	4.8	13.3	8.8
14	9 33.5	9 35.1	9 07.4	1.4	0.9	7.4	4.7	13.4	8.6	14	9 48.5	9 50.1	9 21.7	1.4	0.9	7.4	4.9	13.4	8.8
15	9 33.8	9 35.3	9 07.6	1.5	1.0	7.5	4.8	13.5	8.7	15	9 48.8	9 50.4	9 21.9	1.5	1.0	7.5	4.9	13.5	8.9
16	9 34.0	9 35.6	9 07.9	1.6	1.0	7.6	4.9	13.6	8.7	16	9 49.0	9 50.6	9 22.2	1.6	1.1	7.6	5.0	13.6	9.0
17	9 34.3	9 35.8	9 08.1	1.7	1.1	7.7	4.9	13.7	8.8	17	9 49.3	9 50.9	9 22.4	1.7	1.1	7.7	5.1	13.7	9.0
18	9 34.5	9 36.1	9 08.3	1.8	1.2	7.8	5.0	13.8	8.9	18	9 49.5	9 51.1	9 22.6	1.8	1.2	7.8	5.1	13.8	9.1
19	9 34.8	9 36.3	9 08.6	1.9	1.2	7.9	5.1	13.9	8.9	19	9 49.8	9 51.4	9 22.9	1.9	1.3	7.9	5.2	13.9	9.2
20	9 35.0	9 36.6	9 08.8	2.0	1.3	8.0	5.1	14.0	9.0	20	9 50.0	9 51.6	9 23.1	2.0	1.3	8.0	5.3	14.0	9.2
21	9 35.3	9 36.8	9 09.0	2.1	1.3	8.1	5.2	14.1	9.0	21	9 50.3	9 51.9	9 23.4	2.1	1.4	8.1	5.3	14.1	9.3
22	9 35.5	9 37.1	9 09.3	2.2	1.4	8.2	5.3	14.2	9.1	22	9 50.5	9 52.1	9 23.6	2.2	1.4	8.2	5.4	14.2	9.3
23	9 35.8	9 37.3	9 09.5	2.3	1.5	8.3	5.3	14.3	9.2	23	9 50.8	9 52.4	9 23.8	2.3	1.5	8.3	5.5	14.3	9.4
24	9 36.0	9 37.6	9 09.8	2.4	1.5	8.4	5.4	14.4	9.2	24	9 51.0	9 52.6	9 24.1	2.4	1.6	8.4	5.5	14.4	9.5
25	9 36.3	9 37.8	9 10.0	2.5	1.6	8.5	5.5	14.5	9.3	25	9 51.3	9 52.9	9 24.3	2.5	1.6	8.5	5.6	14.5	9.5
26	9 36.5	9 38.1	9 10.2	2.6	1.7	8.6	5.5	14.6	9.4	26	9 51.5	9 53.1	9 24.6	2.6	1.7	8.6	5.7	14.6	9.6
27	9 36.8	9 38.3	9 10.5	2.7	1.7	8.7	5.6	14.7	9.4	27	9 51.8	9 53.4	9 24.8	2.7	1.8	8.7	5.7	14.7	9.7
28	9 37.0	9 38.6	9 10.7	2.8	1.8	8.8	5.6	14.8	9.5	28	9 52.0	9 53.6	9 25.0	2.8	1.8	8.8	5.8	14.8	9.7
29	9 37.3	9 38.8	9 11.0	2.9	1.9	8.9	5.7	14.9	9.6	29	9 52.3	9 53.9	9 25.3	2.9	1.9	8.9	5.9	14.9	9.8
30	9 37.5	9 39.1	9 11.2	3.0	1.9	9.0	5.8	15.0	9.6	30	9 52.5	9 54.1	9 25.5	3.0	2.0	9.0	5.9	15.0	9.9
31	9 37.8	9 39.3	9 11.4	3.1	2.0	9.1	5.8	15.1	9.7	31	9 52.8	9 54.4	9 25.7	3.1	2.0	9.1	6.0	15.1	9.9
32	9 38.0	9 39.6	9 11.7	3.2	2.1	9.2	5.9	15.2	9.8	32	9 53.0	9 54.6	9 26.0	3.2	2.1	9.2	6.1	15.2	10.0
33	9 38.3	9 39.8	9 11.9	3.3	2.1	9.3	6.0	15.3	9.8	33	9 53.3	9 54.9	9 26.2	3.3	2.2	9.3	6.1	15.3	10.1
34	9 38.5	9 40.1	9 12.1	3.4	2.2	9.4	6.0	15.4	9.9	34	9 53.5	9 55.1	9 26.5	3.4	2.2	9.4	6.2	15.4	10.1
35	9 38.8	9 40.3	9 12.4	3.5	2.2	9.5	6.1	15.5	9.9	35	9 53.8	9 55.4	9 26.7	3.5	2.3	9.5	6.3	15.5	10.2
36	9 39.0	9 40.6	9 12.6	3.6	2.3	9.6	6.2	15.6	10.0	36	9 54.0	9 55.6	9 26.9	3.6	2.4	9.6	6.3	15.6	10.3
37	9 39.3	9 40.8	9 12.9	3.7	2.4	9.7	6.2	15.7	10.1	37	9 54.3	9 55.9	9 27.2	3.7	2.4	9.7	6.4	15.7	10.3
38	9 39.5	9 41.1	9 13.1	3.8	2.4	9.8	6.3	15.8	10.1	38	9 54.5	9 56.1	9 27.4	3.8	2.5	9.8	6.5	15.8	10.4
39	9 39.8	9 41.3	9 13.3	3.9	2.5	9.9	6.4	15.9	10.2	39	9 54.8	9 56.4	9 27.7	3.9	2.6	9.9	6.5	15.9	10.5
40	9 40.0	9 41.6	9 13.6	4.0	2.6	10.0	6.4	16.0	10.3	40	9 55.0	9 56.6	9 27.9	4.0	2.6	10.0	6.6	16.0	10.5
41	9 40.3	9 41.8	9 13.8	4.1	2.6	10.1	6.5	16.1	10.3	41	9 55.3	9 56.9	9 28.1	4.1	2.7	10.1	6.6	16.1	10.6
42	9 40.5	9 42.1	9 14.1	4.2	2.7	10.2	6.5	16.2	10.4	42	9 55.5	9 57.1	9 28.4	4.2	2.8	10.2	6.7	16.2	10.7
43	9 40.8	9 42.3	9 14.3	4.3	2.8	10.3	6.6	16.3	10.5	43	9 55.8	9 57.4	9 28.6	4.3	2.8	10.3	6.8	16.3	10.7
44	9 41.0	9 42.6	9 14.5	4.4	2.8	10.4	6.7	16.4	10.5	44	9 56.0	9 57.6	9 28.8	4.4	2.9	10.4	6.8	16.4	10.8
45	9 41.3	9 42.8	9 14.8	4.5	2.9	10.5	6.7	16.5	10.6	45	9 56.3	9 57.9	9 29.1	4.5	3.0	10.5	6.9	16.5	10.9
46	9 41.5	9 43.1	9 15.0	4.6	3.0	10.6	6.8	16.6	10.7	46	9 56.5	9 58.1	9 29.3	4.6	3.0	10.6	7.0	16.6	10.9
47	9 41.8	9 43.3	9 15.2	4.7	3.0	10.7	6.9	16.7	10.7	47	9 56.8	9 58.4	9 29.6	4.7	3.1	10.7	7.0	16.7	11.0
48	9 42.0	9 43.6	9 15.5	4.8	3.1	10.8	6.9	16.8	10.8	48	9 57.0	9 58.6	9 29.8	4.8	3.2	10.8	7.1	16.8	11.1
49	9 42.3	9 43.8	9 15.7	4.9	3.1	10.9	7.0	16.9	10.8	49	9 57.3	9 58.9	9 30.0	4.9	3.2	10.9	7.2	16.9	11.1
50	9 42.5	9 44.1	9 16.0	5.0	3.2	11.0	7.1	17.0	10.9	50	9 57.5	9 59.1	9 30.3	5.0	3.3	11.0	7.2	17.0	11.2
51	9 42.8	9 44.3	9 16.2	5.1	3.3	11.1	7.1	17.1	11.0	51	9 57.8	9 59.4	9 30.5	5.1	3.4	11.1	7.3	17.1	11.3
52	9 43.0	9 44.6	9 16.4	5.2	3.3	11.2	7.2	17.2	11.0	52	9 58.0	9 59.6	9 30.8	5.2	3.4	11.2	7.4	17.2	11.3
53	9 43.3	9 44.8	9 16.7	5.3	3.4	11.3	7.3	17.3	11.1	53	9 58.3	9 59.9	9 31.0	5.3	3.5	11.3	7.4	17.3	11.4
54	9 43.5	9 45.1	9 16.9	5.4	3.5	11.4	7.3	17.4	11.2	54	9 58.5	10 00.1	9 31.2	5.4	3.6	11.4	7.5	17.4	11.5
55	9 43.8	9 45.3	9 17.2	5.5	3.5	11.5	7.4	17.5	11.2	55	9 58.8	10 00.4	9 31.5	5.5	3.6	11.5	7.6	17.5	11.5
56	9 44.0	9 45.6	9 17.4	5.6	3.6	11.6	7.4	17.6	11.3	56	9 59.0	10 00.6	9 31.7	5.6	3.7	11.6	7.6	17.6	11.6
57	9 44.3	9 45.8	9 17.6	5.7	3.7	11.7	7.5	17.7	11.4	57	9 59.3	10 00.9	9 32.0	5.7	3.8	11.7	7.7	17.7	11.7
58	9 44.5	9 46.1	9 17.9	5.8	3.7	11.8	7.6	17.8	11.4	58	9 59.5	10 01.1	9 32.2	5.8	3.8	11.8	7.8	17.8	11.7
59	9 44.8	9 46.4	9 18.1	5.9	3.8	11.9	7.6	17.9	11.5	59	9 59.8	10 01.4	9 32.4	5.9	3.9	11.9	7.8	17.9	11.8
60	9 45.0	9 46.6	9 18.4	6.0	3.9	12.0	7.7	18.0	11.6	60	10 00.0	10 01.6	9 32.7	6.0	4.0	12.0	7.9	18.0	11.9

40 ^m	SUN PLANETS	ARIES	MOON	ν or d	Corr ⁿ	ν or d	Corr ⁿ	ν or d	Corr ⁿ
00	10 00.0	10 01.6	9 32.7	0.0	0.0	6.0	4.1	12.0	8.1
01	10 00.3	10 01.9	9 32.9	0.1	0.1	6.1	4.1	12.1	8.2
02	10 00.5	10 02.1	9 33.1	0.2	0.1	6.2	4.2	12.2	8.2
03	10 00.8	10 02.4	9 33.4	0.3	0.2	6.3	4.3	12.3	8.3
04	10 01.0	10 02.6	9 33.6	0.4	0.3	6.4	4.3	12.4	8.4
05	10 01.3	10 02.9	9 33.9	0.5	0.3	6.5	4.4	12.5	8.4
06	10 01.5	10 03.1	9 34.1	0.6	0.4	6.6	4.5	12.6	8.5
07	10 01.8	10 03.4	9 34.3	0.7	0.5	6.7	4.5	12.7	8.6
08	10 02.0	10 03.6	9 34.6	0.8	0.5	6.8	4.6	12.8	8.6
09	10 02.3	10 03.9	9 34.8	0.9	0.6	6.9	4.7	12.9	8.7
10	10 02.5	10 04.1	9 35.1	1.0	0.7	7.0	4.7	13.0	8.8
11	10 02.8	10 04.4	9 35.3	1.1	0.7	7.1	4.8	13.1	8.8
12	10 03.0	10 04.7	9 35.5	1.2	0.8	7.2	4.9	13.2	8.9
13	10 03.3	10 04.9	9 35.8	1.3	0.9	7.3	4.9	13.3	9.0
14	10 03.5	10 05.2	9 36.0	1.4	0.9	7.4	5.0	13.4	9.0
15	10 03.8	10 05.4	9 36.2	1.5	1.0	7.5	5.1	13.5	9.1
16	10 04.0	10 05.7	9 36.5	1.6	1.1	7.6	5.1	13.6	9.2
17	10 04.3	10 05.9	9 36.7	1.7	1.1	7.7	5.2	13.7	9.2
18	10 04.5	10 06.2	9 37.0	1.8	1.2	7.8	5.3	13.8	9.3
19	10 04.8	10 06.4	9 37.2	1.9	1.3	7.9	5.3	13.9	9.4
20	10 05.0	10 06.7	9 37.4	2.0	1.4	8.0	5.4	14.0	9.5
21	10 05.3	10 06.9	9 37.7	2.1	1.4	8.1	5.5	14.1	9.5
22	10 05.5	10 07.2	9 37.9	2.2	1.5	8.2	5.5	14.2	9.6
23	10 05.8	10 07.4	9 38.2	2.3	1.6	8.3	5.6	14.3	9.7
24	10 06.0	10 07.7	9 38.4	2.4	1.6	8.4	5.7	14.4	9.7
25	10 06.3	10 07.9	9 38.6	2.5	1.7	8.5	5.7	14.5	9.8
26	10 06.5	10 08.2	9 38.9	2.6	1.8	8.6	5.8	14.6	9.9
27	10 06.8	10 08.4	9 39.1	2.7	1.8	8.7	5.9	14.7	9.9
28	10 07.0	10 08.7	9 39.3	2.8	1.9	8.8	5.9	14.8	10.0
29	10 07.3	10 08.9	9 39.6	2.9	2.0	8.9	6.0	14.9	10.1
30	10 07.5	10 09.2	9 39.8	3.0	2.0	9.0	6.1	15.0	10.1
31	10 07.8	10 09.4	9 40.1	3.1	2.1	9.1	6.1	15.1	10.2
32	10 08.0	10 09.7	9 40.3	3.2	2.2	9.2	6.2	15.2	10.3
33	10 08.3	10 09.9	9 40.5	3.3	2.2	9.3	6.3	15.3	10.3
34	10 08.5	10 10.2	9 40.8	3.4	2.3	9.4	6.3	15.4	10.4
35	10 08.8	10 10.4	9 41.0	3.5	2.4	9.5	6.4	15.5	10.5
36	10 09.0	10 10.7	9 41.3	3.6	2.4	9.6	6.5	15.6	10.5
37	10 09.3	10 10.9	9 41.5	3.7	2.5	9.7	6.5	15.7	10.6
38	10 09.5	10 11.2	9 41.7	3.8	2.6	9.8	6.6	15.8	10.7
39	10 09.8	10 11.4	9 42.0	3.9	2.6	9.9	6.7	15.9	10.7
40	10 10.0	10 11.7	9 42.2	4.0	2.7	10.0	6.8	16.0	10.8
41	10 10.3	10 11.9	9 42.4	4.1	2.8	10.1	6.8	16.1	10.9
42	10 10.5	10 12.2	9 42.7	4.2	2.8	10.2	6.9	16.2	10.9
43	10 10.8	10 12.4	9 42.9	4.3	2.9	10.3	7.0	16.3	11.0
44	10 11.0	10 12.7	9 43.2	4.4	3.0	10.4	7.0	16.4	11.1
45	10 11.3	10 12.9	9 43.4	4.5	3.0	10.5	7.1	16.5	11.1
46	10 11.5	10 13.2	9 43.6	4.6	3.1	10.6	7.2	16.6	11.2
47	10 11.8	10 13.4	9 43.9	4.7	3.2	10.7	7.2	16.7	11.3
48	10 12.0	10 13.7	9 44.1	4.8	3.2	10.8	7.3	16.8	11.3
49	10 12.3	10 13.9	9 44.4	4.9	3.3	10.9	7.4	16.9	11.4
50	10 12.5	10 14.2	9 44.6	5.0	3.4	11.0	7.4	17.0	11.5
51	10 12.8	10 14.4	9 44.8	5.1	3.4	11.1	7.5	17.1	11.5
52	10 13.0	10 14.7	9 45.1	5.2	3.5	11.2	7.6	17.2	11.6
53	10 13.3	10 14.9	9 45.3	5.3	3.6	11.3	7.6	17.3	11.7
54	10 13.5	10 15.2	9 45.6	5.4	3.6	11.4	7.7	17.4	11.7
55	10 13.8	10 15.4	9 45.8	5.5	3.7	11.5	7.8	17.5	11.8
56	10 14.0	10 15.7	9 46.0	5.6	3.8	11.6	7.8	17.6	11.9
57	10 14.3	10 15.9	9 46.3	5.7	3.8	11.7	7.9	17.7	11.9
58	10 14.5	10 16.2	9 46.5	5.8	3.9	11.8	8.0	17.8	12.0
59	10 14.8	10 16.4	9 46.7	5.9	4.0	11.9	8.0	17.9	12.1
60	10 15.0	10 16.7	9 47.0	6.0	4.1	12.0	8.1	18.0	12.2

41 ^m	SUN PLANETS	ARIES	MOON	ν or d	Corr ⁿ	ν or d	Corr ⁿ	ν or d	Corr ⁿ
00	10 15.0	10 16.7	9 47.0	0.0	0.0	6.0	4.2	12.0	8.3
01	10 15.3	10 16.9	9 47.2	0.1	0.1	6.1	4.2	12.1	8.4
02	10 15.5	10 17.2	9 47.5	0.2	0.1	6.2	4.3	12.2	8.4
03	10 15.8	10 17.4	9 47.7	0.3	0.2	6.3	4.4	12.3	8.5
04	10 16.0	10 17.7	9 47.9	0.4	0.3	6.4	4.4	12.4	8.6
05	10 16.3	10 17.9	9 48.2	0.5	0.3	6.5	4.5	12.5	8.6
06	10 16.5	10 18.2	9 48.4	0.6	0.4	6.6	4.6	12.6	8.7
07	10 16.8	10 18.4	9 48.7	0.7	0.5	6.7	4.6	12.7	8.8
08	10 17.0	10 18.7	9 48.9	0.8	0.6	6.8	4.7	12.8	8.9
09	10 17.3	10 18.9	9 49.1	0.9	0.6	6.9	4.8	12.9	8.9
10	10 17.5	10 19.2	9 49.4	1.0	0.7	7.0	4.8	13.0	9.0
11	10 17.8	10 19.4	9 49.6	1.1	0.8	7.1	4.9	13.1	9.1
12	10 18.0	10 19.7	9 49.8	1.2	0.8	7.2	5.0	13.2	9.1
13	10 18.3	10 19.9	9 50.1	1.3	0.9	7.3	5.0	13.3	9.2
14	10 18.5	10 20.2	9 50.3	1.4	1.0	7.4	5.1	13.4	9.3
15	10 18.8	10 20.4	9 50.6	1.5	1.0	7.5	5.2	13.5	9.3
16	10 19.0	10 20.7	9 50.8	1.6	1.1	7.6	5.3	13.6	9.4
17	10 19.3	10 20.9	9 51.0	1.7	1.2	7.7	5.3	13.7	9.5
18	10 19.5	10 21.2	9 51.3	1.8	1.2	7.8	5.4	13.8	9.5
19	10 19.8	10 21.4	9 51.5	1.9	1.3	7.9	5.5	13.9	9.6
20	10 20.0	10 21.7	9 51.8	2.0	1.4	8.0	5.5	14.0	9.7
21	10 20.3	10 21.9	9 52.0	2.1	1.5	8.1	5.6	14.1	9.8
22	10 20.5	10 22.2	9 52.2	2.2	1.5	8.2	5.7	14.2	9.8
23	10 20.8	10 22.4	9 52.5	2.3	1.6	8.3	5.7	14.3	9.9
24	10 21.0	10 22.7	9 52.7	2.4	1.7	8.4	5.8	14.4	10.0
25	10 21.3	10 23.0	9 52.9	2.5	1.7	8.5	5.9	14.5	10.0
26	10 21.5	10 23.2	9 53.2	2.6	1.8	8.6	5.9	14.6	10.1
27	10 21.8	10 23.5	9 53.4	2.7	1.9	8.7	6.0	14.7	10.2
28	10 22.0	10 23.7	9 53.7	2.8	1.9	8.8	6.1	14.8	10.2
29	10 22.3	10 24.0	9 53.9	2.9	2.0	8.9	6.2	14.9	10.3
30	10 22.5	10 24.2	9 54.1	3.0	2.1	9.0	6.2	15.0	10.4
31	10 22.8	10 24.5	9 54.4	3.1	2.1	9.1	6.3	15.1	10.4
32	10 23.0	10 24.7	9 54.6	3.2	2.2	9.2	6.4	15.2	10.5
33	10 23.3	10 25.0	9 54.9	3.3	2.3	9.3	6.4	15.3	10.6
34	10 23.5	10 25.2	9 55.1	3.4	2.4	9.4	6.5	15.4	10.7
35	10 23.8	10 25.5	9 55.3	3.5	2.4	9.5	6.6	15.5	10.7
36	10 24.0	10 25.7	9 55.6	3.6	2.5	9.6	6.6	15.6	10.8
37	10 24.3	10 26.0	9 55.8	3.7	2.6	9.7	6.7	15.7	10.9
38	10 24.5	10 26.2	9 56.1	3.8	2.6	9.8	6.8	15.8	10.9
39	10 24.8	10 26.5	9 56.3	3.9	2.7	9.9	6.8	15.9	11.0
40	10 25.0	10 26.7	9 56.5	4.0	2.8	10.0	6.9	16.0	11.1
41	10 25.3	10 27.0	9 56.8	4.1	2.8	10.1	7.0	16.1	11.1
42	10 25.5	10 27.2	9 57.0	4.2	2.9	10.2	7.1	16.2	11.2
43	10 25.8	10 27.5	9 57.2	4.3	3.0	10.3	7.1	16.3	11.3
44	10 26.0	10 27.7	9 57.5	4.4	3.0	10.4	7.2	16.4	11.3
45	10 26.3	10 28.0	9 57.7	4.5	3.1	10.5	7.3	16.5	11.4
46	10 26.5	10 28.2	9 58.0	4.6	3.2	10.6	7.3	16.6	11.5
47	10 26.8	10 28.5	9 58.2	4.7	3.3	10.7	7.4	16.7	11.6
48	10 27.0	10 28.7	9 58.4	4.8	3.3	10.8	7.5	16.8	11.6
49	10 27.3	10 29.0	9 58.7	4.9	3.4	10.9	7.5	16.9	11.7
50	10 27.5	10 29.2	9 58.9	5.0	3.5	11.0	7.6	17.0	11.8
51	10 27.8	10 29.5	9 59.2	5.1	3.5	11.1	7.7	17.1	11.8
52	10 28.0	10 29.7	9 59.4	5.2	3.6	11.2	7.7	17.2	11.9
53	10 28.3	10 30.0	9 59.6	5.3	3.7	11.3	7.8	17.3	12.0
54	10 28.5	10 30.2	9 59.9	5.4	3.7	11.4	7.9	17.4	12.0
55	10 28.8	10 30.5	10 00.1	5.5	3.8	11.5	8.0	17.5	12.1
56	10 29.0	10 30.7	10 00.3	5.6	3.9	11.6	8.0	17.6	12.2
57	10 29.3	10 31.0	10 00.6	5.7	3.9	11.7	8.1	17.7	12.2
58	10 29.5	10 31.2	10 00.8	5.8	4.0	11.8	8.2	17.8	12.3
59	10 29.8	10 31.5	10 01.1	5.9	4.1	11.9	8.2	17.9	12.4
60	10 30.0	10 31.7	10 01.3	6.0	4.2	12.0	8.3	18.0	12.5

42 ^m	SUN PLANETS	ARIES	MOON	v or d	Corr ⁿ	v or d	Corr ⁿ	v or d	Corr ⁿ	43 ^m	SUN PLANETS	ARIES	MOON	v or d	Corr ⁿ	v or d	Corr ⁿ	v or d	Corr ⁿ
00	10 30.0	10 31.7	10 01.3	0.0	0.0	6.0	4.3	12.0	8.5	00	10 45.0	10 46.8	10 15.6	0.0	0.0	6.0	4.4	12.0	8.7
01	10 30.3	10 32.0	10 01.5	0.1	0.1	6.1	4.3	12.1	8.6	01	10 45.3	10 47.0	10 15.9	0.1	0.1	6.1	4.4	12.1	8.8
02	10 30.5	10 32.2	10 01.8	0.2	0.1	6.2	4.4	12.2	8.6	02	10 45.5	10 47.3	10 16.1	0.2	0.1	6.2	4.5	12.2	8.8
03	10 30.8	10 32.5	10 02.0	0.3	0.2	6.3	4.5	12.3	8.7	03	10 45.8	10 47.5	10 16.3	0.3	0.2	6.3	4.6	12.3	8.9
04	10 31.0	10 32.7	10 02.3	0.4	0.3	6.4	4.5	12.4	8.8	04	10 46.0	10 47.8	10 16.6	0.4	0.3	6.4	4.6	12.4	9.0
05	10 31.3	10 33.0	10 02.5	0.5	0.4	6.5	4.6	12.5	8.9	05	10 46.3	10 48.0	10 16.8	0.5	0.4	6.5	4.7	12.5	9.1
06	10 31.5	10 33.2	10 02.7	0.6	0.4	6.6	4.7	12.6	8.9	06	10 46.5	10 48.3	10 17.0	0.6	0.4	6.6	4.8	12.6	9.1
07	10 31.8	10 33.5	10 03.0	0.7	0.5	6.7	4.7	12.7	9.0	07	10 46.8	10 48.5	10 17.3	0.7	0.5	6.7	4.9	12.7	9.2
08	10 32.0	10 33.7	10 03.2	0.8	0.6	6.8	4.8	12.8	9.1	08	10 47.0	10 48.8	10 17.5	0.8	0.6	6.8	4.9	12.8	9.3
09	10 32.3	10 34.0	10 03.4	0.9	0.6	6.9	4.9	12.9	9.1	09	10 47.3	10 49.0	10 17.8	0.9	0.7	6.9	5.0	12.9	9.4
10	10 32.5	10 34.2	10 03.7	1.0	0.7	7.0	5.0	13.0	9.2	10	10 47.5	10 49.3	10 18.0	1.0	0.7	7.0	5.1	13.0	9.4
11	10 32.8	10 34.5	10 03.9	1.1	0.8	7.1	5.0	13.1	9.3	11	10 47.8	10 49.5	10 18.2	1.1	0.8	7.1	5.1	13.1	9.5
12	10 33.0	10 34.7	10 04.2	1.2	0.9	7.2	5.1	13.2	9.4	12	10 48.0	10 49.8	10 18.5	1.2	0.9	7.2	5.2	13.2	9.6
13	10 33.3	10 35.0	10 04.4	1.3	0.9	7.3	5.2	13.3	9.4	13	10 48.3	10 50.0	10 18.7	1.3	0.9	7.3	5.3	13.3	9.6
14	10 33.5	10 35.2	10 04.6	1.4	1.0	7.4	5.2	13.4	9.5	14	10 48.5	10 50.3	10 19.0	1.4	1.0	7.4	5.4	13.4	9.7
15	10 33.8	10 35.5	10 04.9	1.5	1.1	7.5	5.3	13.5	9.6	15	10 48.8	10 50.5	10 19.2	1.5	1.1	7.5	5.4	13.5	9.8
16	10 34.0	10 35.7	10 05.1	1.6	1.1	7.6	5.4	13.6	9.6	16	10 49.0	10 50.8	10 19.4	1.6	1.2	7.6	5.5	13.6	9.9
17	10 34.3	10 36.0	10 05.4	1.7	1.2	7.7	5.5	13.7	9.7	17	10 49.3	10 51.0	10 19.7	1.7	1.2	7.7	5.6	13.7	9.9
18	10 34.5	10 36.2	10 05.6	1.8	1.3	7.8	5.5	13.8	9.8	18	10 49.5	10 51.3	10 19.9	1.8	1.3	7.8	5.7	13.8	10.0
19	10 34.8	10 36.5	10 05.8	1.9	1.3	7.9	5.6	13.9	9.8	19	10 49.8	10 51.5	10 20.2	1.9	1.4	7.9	5.7	13.9	10.1
20	10 35.0	10 36.7	10 06.1	2.0	1.4	8.0	5.7	14.0	9.9	20	10 50.0	10 51.8	10 20.4	2.0	1.5	8.0	5.8	14.0	10.2
21	10 35.3	10 37.0	10 06.3	2.1	1.5	8.1	5.7	14.1	10.0	21	10 50.3	10 52.0	10 20.6	2.1	1.5	8.1	5.9	14.1	10.2
22	10 35.5	10 37.2	10 06.5	2.2	1.6	8.2	5.8	14.2	10.1	22	10 50.5	10 52.3	10 20.9	2.2	1.6	8.2	5.9	14.2	10.3
23	10 35.8	10 37.5	10 06.8	2.3	1.6	8.3	5.9	14.3	10.1	23	10 50.8	10 52.5	10 21.1	2.3	1.7	8.3	6.0	14.3	10.4
24	10 36.0	10 37.7	10 07.0	2.4	1.7	8.4	6.0	14.4	10.2	24	10 51.0	10 52.8	10 21.3	2.4	1.7	8.4	6.1	14.4	10.4
25	10 36.3	10 38.0	10 07.3	2.5	1.8	8.5	6.0	14.5	10.3	25	10 51.3	10 53.0	10 21.6	2.5	1.8	8.5	6.2	14.5	10.5
26	10 36.5	10 38.2	10 07.5	2.6	1.8	8.6	6.1	14.6	10.3	26	10 51.5	10 53.3	10 21.8	2.6	1.9	8.6	6.2	14.6	10.6
27	10 36.8	10 38.5	10 07.7	2.7	1.9	8.7	6.2	14.7	10.4	27	10 51.8	10 53.5	10 22.1	2.7	2.0	8.7	6.3	14.7	10.7
28	10 37.0	10 38.7	10 08.0	2.8	2.0	8.8	6.2	14.8	10.5	28	10 52.0	10 53.8	10 22.3	2.8	2.0	8.8	6.4	14.8	10.7
29	10 37.3	10 39.0	10 08.2	2.9	2.1	8.9	6.3	14.9	10.6	29	10 52.3	10 54.0	10 22.5	2.9	2.1	8.9	6.5	14.9	10.8
30	10 37.5	10 39.2	10 08.5	3.0	2.1	9.0	6.4	15.0	10.6	30	10 52.5	10 54.3	10 22.8	3.0	2.2	9.0	6.5	15.0	10.9
31	10 37.8	10 39.5	10 08.7	3.1	2.2	9.1	6.4	15.1	10.7	31	10 52.8	10 54.5	10 23.0	3.1	2.2	9.1	6.6	15.1	10.9
32	10 38.0	10 39.7	10 08.9	3.2	2.3	9.2	6.5	15.2	10.8	32	10 53.0	10 54.8	10 23.3	3.2	2.3	9.2	6.7	15.2	11.0
33	10 38.3	10 40.0	10 09.2	3.3	2.3	9.3	6.6	15.3	10.8	33	10 53.3	10 55.0	10 23.5	3.3	2.4	9.3	6.7	15.3	11.1
34	10 38.5	10 40.2	10 09.4	3.4	2.4	9.4	6.7	15.4	10.9	34	10 53.5	10 55.3	10 23.7	3.4	2.5	9.4	6.8	15.4	11.2
35	10 38.8	10 40.5	10 09.7	3.5	2.5	9.5	6.7	15.5	11.0	35	10 53.8	10 55.5	10 24.0	3.5	2.5	9.5	6.9	15.5	11.2
36	10 39.0	10 40.7	10 09.9	3.6	2.6	9.6	6.8	15.6	11.1	36	10 54.0	10 55.8	10 24.2	3.6	2.6	9.6	7.0	15.6	11.3
37	10 39.3	10 41.0	10 10.1	3.7	2.6	9.7	6.9	15.7	11.1	37	10 54.3	10 56.0	10 24.4	3.7	2.7	9.7	7.0	15.7	11.4
38	10 39.5	10 41.3	10 10.4	3.8	2.7	9.8	6.9	15.8	11.2	38	10 54.5	10 56.3	10 24.7	3.8	2.8	9.8	7.1	15.8	11.5
39	10 39.8	10 41.5	10 10.6	3.9	2.8	9.9	7.0	15.9	11.3	39	10 54.8	10 56.5	10 24.9	3.9	2.8	9.9	7.2	15.9	11.5
40	10 40.0	10 41.8	10 10.8	4.0	2.8	10.0	7.1	16.0	11.3	40	10 55.0	10 56.8	10 25.2	4.0	2.9	10.0	7.3	16.0	11.6
41	10 40.3	10 42.0	10 11.1	4.1	2.9	10.1	7.2	16.1	11.4	41	10 55.3	10 57.0	10 25.4	4.1	3.0	10.1	7.3	16.1	11.7
42	10 40.5	10 42.3	10 11.3	4.2	3.0	10.2	7.2	16.2	11.5	42	10 55.5	10 57.3	10 25.6	4.2	3.0	10.2	7.4	16.2	11.7
43	10 40.8	10 42.5	10 11.6	4.3	3.0	10.3	7.3	16.3	11.5	43	10 55.8	10 57.5	10 25.9	4.3	3.1	10.3	7.5	16.3	11.8
44	10 41.0	10 42.8	10 11.8	4.4	3.1	10.4	7.4	16.4	11.6	44	10 56.0	10 57.8	10 26.1	4.4	3.2	10.4	7.5	16.4	11.9
45	10 41.3	10 43.0	10 12.0	4.5	3.2	10.5	7.4	16.5	11.7	45	10 56.3	10 58.0	10 26.4	4.5	3.3	10.5	7.6	16.5	12.0
46	10 41.5	10 43.3	10 12.3	4.6	3.3	10.6	7.5	16.6	11.8	46	10 56.5	10 58.3	10 26.6	4.6	3.3	10.6	7.7	16.6	12.0
47	10 41.8	10 43.5	10 12.5	4.7	3.3	10.7	7.6	16.7	11.8	47	10 56.8	10 58.5	10 26.8	4.7	3.4	10.7	7.8	16.7	12.1
48	10 42.0	10 43.8	10 12.8	4.8	3.4	10.8	7.7	16.8	11.9	48	10 57.0	10 58.8	10 27.1	4.8	3.5	10.8	7.8	16.8	12.2
49	10 42.3	10 44.0	10 13.0	4.9	3.5	10.9	7.7	16.9	12.0	49	10 57.3	10 59.0	10 27.3	4.9	3.6	10.9	7.9	16.9	12.3
50	10 42.5	10 44.3	10 13.2	5.0	3.5	11.0	7.8	17.0	12.0	50	10 57.5	10 59.3	10 27.5	5.0	3.6	11.0	8.0	17.0	12.3
51	10 42.8	10 44.5	10 13.5	5.1	3.6	11.1	7.9	17.1	12.1	51	10 57.8	10 59.6	10 27.8	5.1	3.7	11.1	8.0	17.1	12.4
52	10 43.0	10 44.8	10 13.7	5.2	3.7	11.2	7.9	17.2	12.2	52	10 58.0	10 59.8	10 28.0	5.2	3.8	11.2	8.1	17.2	12.5
53	10 43.3	10 45.0	10 13.9	5.3	3.8	11.3	8.0	17.3	12.3	53	10 58.3	11 00.1	10 28.3	5.3	3.8	11.3	8.2	17.3	12.5
54	10 43.5	10 45.3	10 14.2	5.4	3.8	11.4	8.1	17.4	12.3	54	10 58.5	11 00.3	10 28.5	5.4	3.9	11.4	8.3	17.4	12.6
55	10 43.8	10 45.5	10 14.4	5.5	3.9	11.5	8.1	17.5	12.4	55	10 58.8	11 00.6	10 28.7	5.5	4.0	11.5	8.3	17.5	12.7
56	10 44.0	10 45.8	10 14.7	5.6	4.0	11.6	8.2	17.6	12.5	56	10 59.0	11 00.8	10 29.0	5.6	4.1	11.6	8.4	17.6	12.8
57	10 44.3	10 46.0	10 14.9	5.7	4.0	11.7	8.3	17.7	12.5	57	10 59.3	11 01.1	10 29.2	5.7	4.1	11.7	8.5	17.7	12.8
58	10 44.5	10 46.3	10 15.1	5.8	4.1	11.8	8.4	17.8	12.6	58	10 59.5	11 01.3	10 29.5	5.8	4.2	11.8	8.6	17.8	12.9
59	10 44.8	10 46.5	10 15.4	5.9	4.2	11.9	8.4	17.9	12.7	59	10 59.8	11 01.6	10 29.7	5.9	4.3	11.9	8.6	17.9	13.0
60	10 45.0	10 46.8	10 15.6	6.0	4.3	12.0	8.5	18.0	12.8	60	11 00.0	11 01.8	10 29.9	6.0	4.4	12.0	8.7	18.0	13.1

44 ^m	SUN PLANETS	ARIES	MOON	ν or d	Corr ⁿ	ν or d	Corr ⁿ	ν or d	Corr ⁿ
00	11 00.0	11 01.8	10 29.9	0.0	0.0	6.0	4.5	12.0	8.9
01	11 00.3	11 02.1	10 30.2	0.1	0.1	6.1	4.5	12.1	9.0
02	11 00.5	11 02.3	10 30.4	0.2	0.1	6.2	4.6	12.2	9.0
03	11 00.8	11 02.6	10 30.6	0.3	0.2	6.3	4.7	12.3	9.1
04	11 01.0	11 02.8	10 30.9	0.4	0.3	6.4	4.7	12.4	9.2
05	11 01.3	11 03.1	10 31.1	0.5	0.4	6.5	4.8	12.5	9.3
06	11 01.5	11 03.3	10 31.4	0.6	0.4	6.6	4.9	12.6	9.3
07	11 01.8	11 03.6	10 31.6	0.7	0.5	6.7	5.0	12.7	9.4
08	11 02.0	11 03.8	10 31.8	0.8	0.6	6.8	5.0	12.8	9.5
09	11 02.3	11 04.1	10 32.1	0.9	0.7	6.9	5.1	12.9	9.6
10	11 02.5	11 04.3	10 32.3	1.0	0.7	7.0	5.2	13.0	9.6
11	11 02.8	11 04.6	10 32.6	1.1	0.8	7.1	5.3	13.1	9.7
12	11 03.0	11 04.8	10 32.8	1.2	0.9	7.2	5.3	13.2	9.8
13	11 03.3	11 05.1	10 33.0	1.3	1.0	7.3	5.4	13.3	9.9
14	11 03.5	11 05.3	10 33.3	1.4	1.0	7.4	5.5	13.4	9.9
15	11 03.8	11 05.6	10 33.5	1.5	1.1	7.5	5.6	13.5	10.0
16	11 04.0	11 05.8	10 33.8	1.6	1.2	7.6	5.6	13.6	10.1
17	11 04.3	11 06.1	10 34.0	1.7	1.3	7.7	5.7	13.7	10.2
18	11 04.5	11 06.3	10 34.2	1.8	1.3	7.8	5.8	13.8	10.2
19	11 04.8	11 06.6	10 34.5	1.9	1.4	7.9	5.9	13.9	10.3
20	11 05.0	11 06.8	10 34.7	2.0	1.5	8.0	5.9	14.0	10.4
21	11 05.3	11 07.1	10 34.9	2.1	1.6	8.1	6.0	14.1	10.5
22	11 05.5	11 07.3	10 35.2	2.2	1.6	8.2	6.1	14.2	10.5
23	11 05.8	11 07.6	10 35.4	2.3	1.7	8.3	6.2	14.3	10.6
24	11 06.0	11 07.8	10 35.7	2.4	1.8	8.4	6.2	14.4	10.7
25	11 06.3	11 08.1	10 35.9	2.5	1.9	8.5	6.3	14.5	10.8
26	11 06.5	11 08.3	10 36.1	2.6	1.9	8.6	6.4	14.6	10.8
27	11 06.8	11 08.6	10 36.4	2.7	2.0	8.7	6.5	14.7	10.9
28	11 07.0	11 08.8	10 36.6	2.8	2.1	8.8	6.5	14.8	11.0
29	11 07.3	11 09.1	10 36.9	2.9	2.2	8.9	6.6	14.9	11.1
30	11 07.5	11 09.3	10 37.1	3.0	2.2	9.0	6.7	15.0	11.1
31	11 07.8	11 09.6	10 37.3	3.1	2.3	9.1	6.7	15.1	11.2
32	11 08.0	11 09.8	10 37.6	3.2	2.4	9.2	6.8	15.2	11.3
33	11 08.3	11 10.1	10 37.8	3.3	2.4	9.3	6.9	15.3	11.3
34	11 08.5	11 10.3	10 38.0	3.4	2.5	9.4	7.0	15.4	11.4
35	11 08.8	11 10.6	10 38.3	3.5	2.6	9.5	7.0	15.5	11.5
36	11 09.0	11 10.8	10 38.5	3.6	2.7	9.6	7.1	15.6	11.6
37	11 09.3	11 11.1	10 38.8	3.7	2.7	9.7	7.2	15.7	11.6
38	11 09.5	11 11.3	10 39.0	3.8	2.8	9.8	7.3	15.8	11.7
39	11 09.8	11 11.6	10 39.2	3.9	2.9	9.9	7.3	15.9	11.8
40	11 10.0	11 11.8	10 39.5	4.0	3.0	10.0	7.4	16.0	11.9
41	11 10.3	11 12.1	10 39.7	4.1	3.0	10.1	7.5	16.1	11.9
42	11 10.5	11 12.3	10 40.0	4.2	3.1	10.2	7.6	16.2	12.0
43	11 10.8	11 12.6	10 40.2	4.3	3.2	10.3	7.6	16.3	12.1
44	11 11.0	11 12.8	10 40.4	4.4	3.3	10.4	7.7	16.4	12.2
45	11 11.3	11 13.1	10 40.7	4.5	3.3	10.5	7.8	16.5	12.2
46	11 11.5	11 13.3	10 40.9	4.6	3.4	10.6	7.9	16.6	12.3
47	11 11.8	11 13.6	10 41.1	4.7	3.5	10.7	7.9	16.7	12.4
48	11 12.0	11 13.8	10 41.4	4.8	3.6	10.8	8.0	16.8	12.5
49	11 12.3	11 14.1	10 41.6	4.9	3.6	10.9	8.1	16.9	12.5
50	11 12.5	11 14.3	10 41.9	5.0	3.7	11.0	8.2	17.0	12.6
51	11 12.8	11 14.6	10 42.1	5.1	3.8	11.1	8.2	17.1	12.7
52	11 13.0	11 14.8	10 42.3	5.2	3.9	11.2	8.3	17.2	12.8
53	11 13.3	11 15.1	10 42.6	5.3	3.9	11.3	8.4	17.3	12.8
54	11 13.5	11 15.3	10 42.8	5.4	4.0	11.4	8.5	17.4	12.9
55	11 13.8	11 15.6	10 43.1	5.5	4.1	11.5	8.5	17.5	13.0
56	11 14.0	11 15.8	10 43.3	5.6	4.2	11.6	8.6	17.6	13.1
57	11 14.3	11 16.1	10 43.5	5.7	4.2	11.7	8.7	17.7	13.1
58	11 14.5	11 16.3	10 43.8	5.8	4.3	11.8	8.8	17.8	13.2
59	11 14.8	11 16.6	10 44.0	5.9	4.4	11.9	8.8	17.9	13.3
60	11 15.0	11 16.8	10 44.3	6.0	4.5	12.0	8.9	18.0	13.4

m 45	SUN PLANETS	ARIES	MOON	ν or d	Corr ⁿ	ν or d	Corr ⁿ	ν or d	Corr ⁿ
s	° ' "	° ' "	° ' "	° ' "	' "	° ' "	' "	° ' "	' "
00	11 15.0	11 16.8	10 44.3	0.0	0.0	6.0	4.6	12.0	9.1
01	11 15.3	11 17.1	10 44.5	0.1	0.1	6.1	4.6	12.1	9.2
02	11 15.5	11 17.3	10 44.7	0.2	0.2	6.2	4.7	12.2	9.3
03	11 15.8	11 17.6	10 45.0	0.3	0.2	6.3	4.8	12.3	9.3
04	11 16.0	11 17.9	10 45.2	0.4	0.3	6.4	4.9	12.4	9.4
05	11 16.3	11 18.1	10 45.4	0.5	0.4	6.5	4.9	12.5	9.5
06	11 16.5	11 18.4	10 45.7	0.6	0.5	6.6	5.0	12.6	9.6
07	11 16.8	11 18.6	10 45.9	0.7	0.5	6.7	5.1	12.7	9.6
08	11 17.0	11 18.9	10 46.2	0.8	0.6	6.8	5.2	12.8	9.7
09	11 17.3	11 19.1	10 46.4	0.9	0.7	6.9	5.2	12.9	9.8
10	11 17.5	11 19.4	10 46.6	1.0	0.8	7.0	5.3	13.0	9.9
11	11 17.8	11 19.6	10 46.9	1.1	0.8	7.1	5.4	13.1	9.9
12	11 18.0	11 19.9	10 47.1	1.2	0.9	7.2	5.5	13.2	10.0
13	11 18.3	11 20.1	10 47.4	1.3	1.0	7.3	5.5	13.3	10.1
14	11 18.5	11 20.4	10 47.6	1.4	1.1	7.4	5.6	13.4	10.2
15	11 18.8	11 20.6	10 47.8	1.5	1.1	7.5	5.7	13.5	10.2
16	11 19.0	11 20.9	10 48.1	1.6	1.2	7.6	5.8	13.6	10.3
17	11 19.3	11 21.1	10 48.3	1.7	1.3	7.7	5.8	13.7	10.4
18	11 19.5	11 21.4	10 48.5	1.8	1.4	7.8	5.9	13.8	10.5
19	11 19.8	11 21.6	10 48.8	1.9	1.4	7.9	6.0	13.9	10.5
20	11 20.0	11 21.9	10 49.0	2.0	1.5	8.0	6.1	14.0	10.6
21	11 20.3	11 22.1	10 49.3	2.1	1.6	8.1	6.1	14.1	10.7
22	11 20.5	11 22.4	10 49.5	2.2	1.7	8.2	6.2	14.2	10.8
23	11 20.8	11 22.6	10 49.7	2.3	1.7	8.3	6.3	14.3	10.8
24	11 21.0	11 22.9	10 50.0	2.4	1.8	8.4	6.4	14.4	10.9
25	11 21.3	11 23.1	10 50.2	2.5	1.9	8.5	6.4	14.5	11.0
26	11 21.5	11 23.4	10 50.5	2.6	2.0	8.6	6.5	14.6	11.1
27	11 21.8	11 23.6	10 50.7	2.7	2.0	8.7	6.6	14.7	11.1
28	11 22.0	11 23.9	10 50.9	2.8	2.1	8.8	6.7	14.8	11.2
29	11 22.3	11 24.1	10 51.2	2.9	2.2	8.9	6.7	14.9	11.3
30	11 22.5	11 24.4	10 51.4	3.0	2.3	9.0	6.8	15.0	11.4
31	11 22.8	11 24.6	10 51.6	3.1	2.4	9.1	6.9	15.1	11.5
32	11 23.0	11 24.9	10 51.9	3.2	2.4	9.2	7.0	15.2	11.5
33	11 23.3	11 25.1	10 52.1	3.3	2.5	9.3	7.1	15.3	11.6
34	11 23.5	11 25.4	10 52.4	3.4	2.6	9.4	7.1	15.4	11.7
35	11 23.8	11 25.6	10 52.6	3.5	2.7	9.5	7.2	15.5	11.8
36	11 24.0	11 25.9	10 52.8	3.6	2.7	9.6	7.3	15.6	11.8
37	11 24.3	11 26.1	10 53.1	3.7	2.8	9.7	7.4	15.7	11.9
38	11 24.5	11 26.4	10 53.3	3.8	2.9	9.8	7.4	15.8	12.0
39	11 24.8	11 26.6	10 53.6	3.9	3.0	9.9	7.5	15.9	12.1
40	11 25.0	11 26.9	10 53.8	4.0	3.0	10.0	7.6	16.0	12.1
41	11 25.3	11 27.1	10 54.0	4.1	3.1	10.1	7.7	16.1	12.2
42	11 25.5	11 27.4	10 54.3	4.2	3.2	10.2	7.7	16.2	12.3
43	11 25.8	11 27.6	10 54.5	4.3	3.3	10.3	7.8	16.3	12.4
44	11 26.0	11 27.9	10 54.7	4.4	3.3	10.4	7.9	16.4	12.4
45	11 26.3	11 28.1	10 55.0	4.5	3.4	10.5	8.0	16.5	12.5
46	11 26.5	11 28.4	10 55.2	4.6	3.5	10.6	8.0	16.6	12.6
47	11 26.8	11 28.6	10 55.5	4.7	3.6	10.7	8.1	16.7	12.7
48	11 27.0	11 28.9	10 55.7	4.8	3.6	10.8	8.2	16.8	12.7
49	11 27.3	11 29.1	10 55.9	4.9	3.7	10.9	8.3	16.9	12.8
50	11 27.5	11 29.4	10 56.2	5.0	3.8	11.0	8.3	17.0	12.9
51	11 27.8	11 29.6	10 56.4	5.1	3.9	11.1	8.4	17.1	13.0
52	11 28.0	11 29.9	10 56.7	5.2	3.9	11.2	8.5	17.2	13.0
53	11 28.3	11 30.1	10 56.9	5.3	4.0	11.3	8.6	17.3	13.1
54	11 28.5	11 30.4	10 57.1	5.4	4.1	11.4	8.6	17.4	13.2
55	11 28.8	11 30.6	10 57.4	5.5	4.2	11.5	8.7	17.5	13.3
56	11 29.0	11 30.9	10 57.6	5.6	4.2	11.6	8.8	17.6	13.3
57	11 29.3	11 31.1	10 57.9	5.7	4.3	11.7	8.9	17.7	13.4
58	11 29.5	11 31.4	10 58.1	5.8	4.4	11.8	8.9	17.8	13.5
59	11 29.8	11 31.6	10 58.3	5.9	4.5	11.9	9.0	17.9	13.6
60	11 30.0	11 31.9	10 58.6	6.0	4.6	12.0	9.1	18.0	13.7

^m 46	SUN PLANETS	ARIES	MOON	ν or d	Corr ⁿ	ν or d	Corr ⁿ	ν or d	Corr ⁿ
s	o	i	o	i	o	i	o	i	
00	11 30.0	11 31.9	10 58.6	0.0	0.0	6.0	4.7	12.0	9.3
01	11 30.3	11 32.1	10 58.8	0.1	0.1	6.1	4.7	12.1	9.4
02	11 30.5	11 32.4	10 59.0	0.2	0.2	6.2	4.8	12.2	9.5
03	11 30.8	11 32.6	10 59.3	0.3	0.2	6.3	4.9	12.3	9.5
04	11 31.0	11 32.9	10 59.5	0.4	0.3	6.4	5.0	12.4	9.6
05	11 31.3	11 33.1	10 59.8	0.5	0.4	6.5	5.0	12.5	9.7
06	11 31.5	11 33.4	11 00.0	0.6	0.5	6.6	5.1	12.6	9.8
07	11 31.8	11 33.6	11 00.2	0.7	0.5	6.7	5.2	12.7	9.8
08	11 32.0	11 33.9	11 00.5	0.8	0.6	6.8	5.3	12.8	9.9
09	11 32.3	11 34.1	11 00.7	0.9	0.7	6.9	5.3	12.9	10.0
10	11 32.5	11 34.4	11 01.0	1.0	0.8	7.0	5.4	13.0	10.1
11	11 32.8	11 34.6	11 01.2	1.1	0.9	7.1	5.5	13.1	10.2
12	11 33.0	11 34.9	11 01.4	1.2	0.9	7.2	5.6	13.2	10.2
13	11 33.3	11 35.1	11 01.7	1.3	1.0	7.3	5.7	13.3	10.3
14	11 33.5	11 35.4	11 01.9	1.4	1.1	7.4	5.7	13.4	10.4
15	11 33.8	11 35.6	11 02.1	1.5	1.2	7.5	5.8	13.5	10.5
16	11 34.0	11 35.9	11 02.4	1.6	1.2	7.6	5.9	13.6	10.5
17	11 34.3	11 36.2	11 02.6	1.7	1.3	7.7	6.0	13.7	10.6
18	11 34.5	11 36.4	11 02.9	1.8	1.4	7.8	6.0	13.8	10.7
19	11 34.8	11 36.7	11 03.1	1.9	1.5	7.9	6.1	13.9	10.8
20	11 35.0	11 36.9	11 03.3	2.0	1.6	8.0	6.2	14.0	10.9
21	11 35.3	11 37.2	11 03.6	2.1	1.6	8.1	6.3	14.1	10.9
22	11 35.5	11 37.4	11 03.8	2.2	1.7	8.2	6.4	14.2	11.0
23	11 35.8	11 37.7	11 04.1	2.3	1.8	8.3	6.4	14.3	11.1
24	11 36.0	11 37.9	11 04.3	2.4	1.9	8.4	6.5	14.4	11.2
25	11 36.3	11 38.2	11 04.5	2.5	1.9	8.5	6.6	14.5	11.2
26	11 36.5	11 38.4	11 04.8	2.6	2.0	8.6	6.7	14.6	11.3
27	11 36.8	11 38.7	11 05.0	2.7	2.1	8.7	6.7	14.7	11.4
28	11 37.0	11 38.9	11 05.2	2.8	2.2	8.8	6.8	14.8	11.5
29	11 37.3	11 39.2	11 05.5	2.9	2.2	8.9	6.9	14.9	11.5
30	11 37.5	11 39.4	11 05.7	3.0	2.3	9.0	7.0	15.0	11.6
31	11 37.8	11 39.7	11 06.0	3.1	2.4	9.1	7.1	15.1	11.7
32	11 38.0	11 39.9	11 06.2	3.2	2.5	9.2	7.1	15.2	11.8
33	11 38.3	11 40.2	11 06.4	3.3	2.6	9.3	7.2	15.3	11.9
34	11 38.5	11 40.4	11 06.7	3.4	2.6	9.4	7.3	15.4	11.9
35	11 38.8	11 40.7	11 06.9	3.5	2.7	9.5	7.4	15.5	12.0
36	11 39.0	11 40.9	11 07.2	3.6	2.8	9.6	7.4	15.6	12.1
37	11 39.3	11 41.2	11 07.4	3.7	2.9	9.7	7.5	15.7	12.2
38	11 39.5	11 41.4	11 07.6	3.8	2.9	9.8	7.6	15.8	12.2
39	11 39.8	11 41.7	11 07.9	3.9	3.0	9.9	7.7	15.9	12.3
40	11 40.0	11 41.9	11 08.1	4.0	3.1	10.0	7.8	16.0	12.4
41	11 40.3	11 42.2	11 08.3	4.1	3.2	10.1	7.8	16.1	12.5
42	11 40.5	11 42.4	11 08.6	4.2	3.3	10.2	7.9	16.2	12.6
43	11 40.8	11 42.7	11 08.8	4.3	3.3	10.3	8.0	16.3	12.6
44	11 41.0	11 42.9	11 09.1	4.4	3.4	10.4	8.1	16.4	12.7
45	11 41.3	11 43.2	11 09.3	4.5	3.5	10.5	8.1	16.5	12.8
46	11 41.5	11 43.4	11 09.5	4.6	3.6	10.6	8.2	16.6	12.9
47	11 41.8	11 43.7	11 09.8	4.7	3.6	10.7	8.3	16.7	12.9
48	11 42.0	11 43.9	11 10.0	4.8	3.7	10.8	8.4	16.8	13.0
49	11 42.3	11 44.2	11 10.3	4.9	3.8	10.9	8.4	16.9	13.1
50	11 42.5	11 44.4	11 10.5	5.0	3.9	11.0	8.5	17.0	13.2
51	11 42.8	11 44.7	11 10.7	5.1	4.0	11.1	8.6	17.1	13.3
52	11 43.0	11 44.9	11 11.0	5.2	4.0	11.2	8.7	17.2	13.3
53	11 43.3	11 45.2	11 11.2	5.3	4.1	11.3	8.8	17.3	13.4
54	11 43.5	11 45.4	11 11.5	5.4	4.2	11.4	8.8	17.4	13.5
55	11 43.8	11 45.7	11 11.7	5.5	4.3	11.5	8.9	17.5	13.6
56	11 44.0	11 45.9	11 11.9	5.6	4.3	11.6	9.0	17.6	13.6
57	11 44.3	11 46.2	11 12.2	5.7	4.4	11.7	9.1	17.7	13.7
58	11 44.5	11 46.4	11 12.4	5.8	4.5	11.8	9.1	17.8	13.8
59	11 44.8	11 46.7	11 12.6	5.9	4.6	11.9	9.2	17.9	13.9
60	11 45.0	11 46.9	11 12.9	6.0	4.7	12.0	9.3	18.0	14.0

^m 47	SUN PLANETS	ARIES	MOON	ν or d	Corr ⁿ	ν or d	Corr ⁿ	ν or d	Corr ⁿ
s	o	i	o	i	o	i	o	i	
00	11 45.0	11 46.9	11 12.9	0.0	0.0	6.0	4.8	12.0	9.5
01	11 45.3	11 47.2	11 13.1	0.1	0.1	6.1	4.8	12.1	9.6
02	11 45.5	11 47.4	11 13.4	0.2	0.2	6.2	4.9	12.2	9.7
03	11 45.8	11 47.7	11 13.6	0.3	0.2	6.3	5.0	12.3	9.7
04	11 46.0	11 47.9	11 13.8	0.4	0.3	6.4	5.1	12.4	9.8
05	11 46.3	11 48.2	11 14.1	0.5	0.4	6.5	5.1	12.5	9.9
06	11 46.5	11 48.4	11 14.3	0.6	0.5	6.6	5.2	12.6	10.0
07	11 46.8	11 48.7	11 14.6	0.7	0.6	6.7	5.3	12.7	10.1
08	11 47.0	11 48.9	11 14.8	0.8	0.6	6.8	5.4	12.8	10.1
09	11 47.3	11 49.2	11 15.0	0.9	0.7	6.9	5.5	12.9	10.2
10	11 47.5	11 49.4	11 15.3	1.0	0.8	7.0	5.5	13.0	10.3
11	11 47.8	11 49.7	11 15.5	1.1	0.9	7.1	5.6	13.1	10.4
12	11 48.0	11 49.9	11 15.7	1.2	1.0	7.2	5.7	13.2	10.5
13	11 48.3	11 50.2	11 16.0	1.3	1.0	7.3	5.8	13.3	10.5
14	11 48.5	11 50.4	11 16.2	1.4	1.1	7.4	5.9	13.4	10.6
15	11 48.8	11 50.7	11 16.5	1.5	1.2	7.5	5.9	13.5	10.7
16	11 49.0	11 50.9	11 16.7	1.6	1.3	7.6	6.0	13.6	10.8
17	11 49.3	11 51.2	11 16.9	1.7	1.3	7.7	6.1	13.7	10.8
18	11 49.5	11 51.4	11 17.2	1.8	1.4	7.8	6.2	13.8	10.9
19	11 49.8	11 51.7	11 17.4	1.9	1.5	7.9	6.3	13.9	11.0
20	11 50.0	11 51.9	11 17.7	2.0	1.6	8.0	6.3	14.0	11.1
21	11 50.3	11 52.2	11 17.9	2.1	1.7	8.1	6.4	14.1	11.2
22	11 50.5	11 52.4	11 18.1	2.2	1.7	8.2	6.5	14.2	11.2
23	11 50.8	11 52.7	11 18.4	2.3	1.8	8.3	6.6	14.3	11.3
24	11 51.0	11 52.9	11 18.6	2.4	1.9	8.4	6.7	14.4	11.4
25	11 51.3	11 53.2	11 18.8	2.5	2.0	8.5	6.7	14.5	11.5
26	11 51.5	11 53.4	11 19.1	2.6	2.1	8.6	6.8	14.6	11.6
27	11 51.8	11 53.7	11 19.3	2.7	2.1	8.7	6.9	14.7	11.6
28	11 52.0	11 53.9	11 19.6	2.8	2.2	8.8	7.0	14.8	11.7
29	11 52.3	11 54.2	11 19.8	2.9	2.3	8.9	7.0	14.9	11.8
30	11 52.5	11 54.5	11 20.0	3.0	2.4	9.0	7.1	15.0	11.9
31	11 52.8	11 54.7	11 20.3	3.1	2.5	9.1	7.2	15.1	12.0
32	11 53.0	11 55.0	11 20.5	3.2	2.5	9.2	7.3	15.2	12.0
33	11 53.3	11 55.2	11 20.8	3.3	2.6	9.3	7.4	15.3	12.1
34	11 53.5	11 55.5	11 21.0	3.4	2.7	9.4	7.4	15.4	12.2
35	11 53.8	11 55.7	11 21.2	3.5	2.8	9.5	7.5	15.5	12.3
36	11 54.0	11 56.0	11 21.5	3.6	2.9	9.6	7.6	15.6	12.4
37	11 54.3	11 56.2	11 21.7	3.7	2.9	9.7	7.7	15.7	12.4
38	11 54.5	11 56.5	11 22.0	3.8	3.0	9.8	7.8	15.8	12.5
39	11 54.8	11 56.7	11 22.2	3.9	3.1	9.9	7.8	15.9	12.6
40	11 55.0	11 57.0	11 22.4	4.0	3.2	10.0	7.9	16.0	12.7
41	11 55.3	11 57.2	11 22.7	4.1	3.2	10.1	8.0	16.1	12.7
42	11 55.5	11 57.5	11 22.9	4.2	3.3	10.2	8.1	16.2	12.8
43	11 55.8	11 57.7	11 23.1	4.3	3.4	10.3	8.2	16.3	12.9
44	11 56.0	11 58.0	11 23.4	4.4	3.5	10.4	8.2	16.4	13.0
45	11 56.3	11 58.2	11 23.6	4.5	3.6	10.5	8.3	16.5	13.1
46	11 56.5	11 58.5	11 23.9	4.6	3.6	10.6	8.4	16.6	13.1
47	11 56.8	11 58.7	11 24.1	4.7	3.7	10.7	8.5	16.7	13.2
48	11 57.0	11 59.0	11 24.3	4.8	3.8	10.8	8.6	16.8	13.3
49	11 57.3	11 59.2	11 24.6	4.9	3.9	10.9	8.6	16.9	13.4
50	11 57.5	11 59.5	11 24.8	5.0	4.0	11.0	8.7	17.0	13.5
51	11 57.8	11 59.7	11 25.1	5.1	4.0	11.1	8.8	17.1	13.5
52	11 58.0	12 00.0	11 25.3	5.2	4.1	11.2	8.9	17.2	13.6
53	11 58.3	12 00.2	11 25.5	5.3	4.2	11.3	8.9	17.3	13.7
54	11 58.5	12 00.5	11 25.8	5.4	4.3	11.4	9.0	17.4	13.8
55	11 58.8	12 00.7	11 26.0	5.5	4.4	11.5	9.1	17.5	13.9
56	11 59.0	12 01.0	11 26.2	5.6	4.4	11.6	9.2	17.6	13.9
57	11 59.3	12 01.2	11 26.5	5.7	4.5	11.7	9.3	17.7	14.0
58	11 59.5	12 01.5	11 26.7	5.8	4.6	11.8	9.3	17.8	14.1
59	11 59.8	12 01.7	11 27.0	5.9	4.7	11.9	9.4	17.9	14.2
60	12 00.0	12 02.0	11 27.2	6.0	4.8	12.0	9.5	18.0	14.3

48 ^m	SUN PLANETS	ARIES	MOON	$\frac{v}{d}$ or Corr ⁿ	$\frac{v}{d}$ or Corr ⁿ	$\frac{v}{d}$ or Corr ⁿ	49 ^m	SUN PLANETS	ARIES	MOON	$\frac{v}{d}$ or Corr ⁿ	$\frac{v}{d}$ or Corr ⁿ	$\frac{v}{d}$ or Corr ⁿ
00	12 00-0	12 02-0	11 27-2	0-0 0-0	6-0 4-9	12-0 9-7	00	12 15-0	12 17-0	11 41-5	0-0 0-0	6-0 5-0	12-0 9-9
01	12 00-3	12 02-2	11 27-4	0-1 0-1	6-1 4-9	12-1 9-8	01	12 15-3	12 17-3	11 41-8	0-1 0-1	6-1 5-0	12-1 10-0
02	12 00-5	12 02-5	11 27-7	0-2 0-2	6-2 5-0	12-2 9-9	02	12 15-5	12 17-5	11 42-0	0-2 0-2	6-2 5-1	12-2 10-1
03	12 00-8	12 02-7	11 27-9	0-3 0-2	6-3 5-1	12-3 9-9	03	12 15-8	12 17-8	11 42-2	0-3 0-2	6-3 5-2	12-3 10-1
04	12 01-0	12 03-0	11 28-2	0-4 0-3	6-4 5-2	12-4 10-0	04	12 16-0	12 18-0	11 42-5	0-4 0-3	6-4 5-3	12-4 10-2
05	12 01-3	12 03-2	11 28-4	0-5 0-4	6-5 5-3	12-5 10-1	05	12 16-3	12 18-3	11 42-7	0-5 0-4	6-5 5-4	12-5 10-3
06	12 01-5	12 03-5	11 28-6	0-6 0-5	6-6 5-3	12-6 10-2	06	12 16-5	12 18-5	11 42-9	0-6 0-5	6-6 5-4	12-6 10-4
07	12 01-8	12 03-7	11 28-9	0-7 0-6	6-7 5-4	12-7 10-3	07	12 16-8	12 18-8	11 43-2	0-7 0-6	6-7 5-5	12-7 10-5
08	12 02-0	12 04-0	11 29-1	0-8 0-6	6-8 5-5	12-8 10-3	08	12 17-0	12 19-0	11 43-4	0-8 0-7	6-8 5-6	12-8 10-6
09	12 02-3	12 04-2	11 29-3	0-9 0-7	6-9 5-6	12-9 10-4	09	12 17-3	12 19-3	11 43-7	0-9 0-7	6-9 5-7	12-9 10-6
10	12 02-5	12 04-5	11 29-6	1-0 0-8	7-0 5-7	13-0 10-5	10	12 17-5	12 19-5	11 43-9	1-0 0-8	7-0 5-8	13-0 10-7
11	12 02-8	12 04-7	11 29-8	1-1 0-9	7-1 5-7	13-1 10-6	11	12 17-8	12 19-8	11 44-1	1-1 0-9	7-1 5-9	13-1 10-8
12	12 03-0	12 05-0	11 30-1	1-2 1-0	7-2 5-8	13-2 10-7	12	12 18-0	12 20-0	11 44-4	1-2 1-0	7-2 5-9	13-2 10-9
13	12 03-3	12 05-2	11 30-3	1-3 1-1	7-3 5-9	13-3 10-8	13	12 18-3	12 20-3	11 44-6	1-3 1-1	7-3 6-0	13-3 11-0
14	12 03-5	12 05-5	11 30-5	1-4 1-1	7-4 6-0	13-4 10-8	14	12 18-5	12 20-5	11 44-9	1-4 1-2	7-4 6-1	13-4 11-1
15	12 03-8	12 05-7	11 30-8	1-5 1-2	7-5 6-1	13-5 10-9	15	12 18-8	12 20-8	11 45-1	1-5 1-2	7-5 6-2	13-5 11-1
16	12 04-0	12 06-0	11 31-0	1-6 1-3	7-6 6-1	13-6 11-0	16	12 19-0	12 21-0	11 45-3	1-6 1-3	7-6 6-3	13-6 11-2
17	12 04-3	12 06-2	11 31-3	1-7 1-4	7-7 6-2	13-7 11-1	17	12 19-3	12 21-3	11 45-6	1-7 1-4	7-7 6-4	13-7 11-3
18	12 04-5	12 06-5	11 31-5	1-8 1-5	7-8 6-3	13-8 11-2	18	12 19-5	12 21-5	11 45-8	1-8 1-5	7-8 6-4	13-8 11-4
19	12 04-8	12 06-7	11 31-7	1-9 1-5	7-9 6-4	13-9 11-2	19	12 19-8	12 21-8	11 46-1	1-9 1-6	7-9 6-5	13-9 11-5
20	12 05-0	12 07-0	11 32-0	2-0 1-6	8-0 6-5	14-0 11-3	20	12 20-0	12 22-0	11 46-3	2-0 1-7	8-0 6-6	14-0 11-6
21	12 05-3	12 07-2	11 32-2	2-1 1-7	8-1 6-5	14-1 11-4	21	12 20-3	12 22-3	11 46-5	2-1 1-7	8-1 6-7	14-1 11-6
22	12 05-5	12 07-5	11 32-4	2-2 1-8	8-2 6-6	14-2 11-5	22	12 20-5	12 22-5	11 46-8	2-2 1-8	8-2 6-8	14-2 11-7
23	12 05-8	12 07-7	11 32-7	2-3 1-9	8-3 6-7	14-3 11-6	23	12 20-8	12 22-8	11 47-0	2-3 1-9	8-3 6-8	14-3 11-8
24	12 06-0	12 08-0	11 32-9	2-4 1-9	8-4 6-8	14-4 11-6	24	12 21-0	12 23-0	11 47-2	2-4 2-0	8-4 6-9	14-4 11-9
25	12 06-3	12 08-2	11 33-2	2-5 2-0	8-5 6-9	14-5 11-7	25	12 21-3	12 23-3	11 47-5	2-5 2-1	8-5 7-0	14-5 12-0
26	12 06-5	12 08-5	11 33-4	2-6 2-1	8-6 7-0	14-6 11-8	26	12 21-5	12 23-5	11 47-7	2-6 2-1	8-6 7-1	14-6 12-0
27	12 06-8	12 08-7	11 33-6	2-7 2-2	8-7 7-0	14-7 11-9	27	12 21-8	12 23-8	11 48-0	2-7 2-2	8-7 7-2	14-7 12-1
28	12 07-0	12 09-0	11 33-9	2-8 2-3	8-8 7-1	14-8 12-0	28	12 22-0	12 24-0	11 48-2	2-8 2-3	8-8 7-3	14-8 12-2
29	12 07-3	12 09-2	11 34-1	2-9 2-3	8-9 7-2	14-9 12-0	29	12 22-3	12 24-3	11 48-4	2-9 2-4	8-9 7-3	14-9 12-3
30	12 07-5	12 09-5	11 34-4	3-0 2-4	9-0 7-3	15-0 12-1	30	12 22-5	12 24-5	11 48-7	3-0 2-5	9-0 7-4	15-0 12-4
31	12 07-8	12 09-7	11 34-6	3-1 2-5	9-1 7-4	15-1 12-2	31	12 22-8	12 24-8	11 48-9	3-1 2-6	9-1 7-5	15-1 12-5
32	12 08-0	12 10-0	11 34-8	3-2 2-6	9-2 7-4	15-2 12-3	32	12 23-0	12 25-0	11 49-2	3-2 2-6	9-2 7-6	15-2 12-5
33	12 08-3	12 10-2	11 35-1	3-3 2-7	9-3 7-5	15-3 12-4	33	12 23-3	12 25-3	11 49-4	3-3 2-7	9-3 7-7	15-3 12-6
34	12 08-5	12 10-5	11 35-3	3-4 2-7	9-4 7-6	15-4 12-4	34	12 23-5	12 25-5	11 49-6	3-4 2-8	9-4 7-8	15-4 12-7
35	12 08-8	12 10-7	11 35-6	3-5 2-8	9-5 7-7	15-5 12-5	35	12 23-8	12 25-8	11 49-9	3-5 2-9	9-5 7-8	15-5 12-8
36	12 09-0	12 11-0	11 35-8	3-6 2-9	9-6 7-8	15-6 12-6	36	12 24-0	12 26-0	11 50-1	3-6 3-0	9-6 7-9	15-6 12-9
37	12 09-3	12 11-2	11 36-0	3-7 3-0	9-7 7-8	15-7 12-7	37	12 24-3	12 26-3	11 50-3	3-7 3-1	9-7 8-0	15-7 13-0
38	12 09-5	12 11-5	11 36-3	3-8 3-1	9-8 7-9	15-8 12-8	38	12 24-5	12 26-5	11 50-6	3-8 3-1	9-8 8-1	15-8 13-0
39	12 09-8	12 11-7	11 36-5	3-9 3-2	9-9 8-0	15-9 12-9	39	12 24-8	12 26-8	11 50-8	3-9 3-2	9-9 8-2	15-9 13-1
40	12 10-0	12 12-0	11 36-7	4-0 3-2	10-0 8-1	16-0 12-9	40	12 25-0	12 27-0	11 51-1	4-0 3-3	10-0 8-3	16-0 13-2
41	12 10-3	12 12-2	11 37-0	4-1 3-3	10-1 8-2	16-1 13-0	41	12 25-3	12 27-3	11 51-3	4-1 3-4	10-1 8-3	16-1 13-3
42	12 10-5	12 12-5	11 37-2	4-2 3-4	10-2 8-2	16-2 13-1	42	12 25-5	12 27-5	11 51-5	4-2 3-5	10-2 8-4	16-2 13-4
43	12 10-8	12 12-8	11 37-5	4-3 3-5	10-3 8-3	16-3 13-2	43	12 25-8	12 27-8	11 51-8	4-3 3-5	10-3 8-5	16-3 13-4
44	12 11-0	12 13-0	11 37-7	4-4 3-6	10-4 8-4	16-4 13-3	44	12 26-0	12 28-0	11 52-0	4-4 3-6	10-4 8-6	16-4 13-5
45	12 11-3	12 13-3	11 37-9	4-5 3-6	10-5 8-5	16-5 13-3	45	12 26-3	12 28-3	11 52-3	4-5 3-7	10-5 8-7	16-5 13-6
46	12 11-5	12 13-5	11 38-2	4-6 3-7	10-6 8-6	16-6 13-4	46	12 26-5	12 28-5	11 52-5	4-6 3-8	10-6 8-7	16-6 13-7
47	12 11-8	12 13-8	11 38-4	4-7 3-8	10-7 8-6	16-7 13-5	47	12 26-8	12 28-8	11 52-7	4-7 3-9	10-7 8-8	16-7 13-8
48	12 12-0	12 14-0	11 38-7	4-8 3-9	10-8 8-7	16-8 13-6	48	12 27-0	12 29-0	11 53-0	4-8 4-0	10-8 8-9	16-8 13-9
49	12 12-3	12 14-3	11 38-9	4-9 4-0	10-9 8-8	16-9 13-7	49	12 27-3	12 29-3	11 53-2	4-9 4-0	10-9 9-0	16-9 13-9
50	12 12-5	12 14-5	11 39-1	5-0 4-0	11-0 8-9	17-0 13-7	50	12 27-5	12 29-5	11 53-4	5-0 4-1	11-0 9-1	17-0 14-0
51	12 12-8	12 14-8	11 39-4	5-1 4-1	11-1 9-0	17-1 13-8	51	12 27-8	12 29-8	11 53-7	5-1 4-2	11-1 9-2	17-1 14-1
52	12 13-0	12 15-0	11 39-6	5-2 4-2	11-2 9-1	17-2 13-9	52	12 28-0	12 30-0	11 53-9	5-2 4-3	11-2 9-2	17-2 14-2
53	12 13-3	12 15-3	11 39-8	5-3 4-3	11-3 9-1	17-3 14-0	53	12 28-3	12 30-3	11 54-2	5-3 4-4	11-3 9-3	17-3 14-3
54	12 13-5	12 15-5	11 40-1	5-4 4-4	11-4 9-2	17-4 14-1	54	12 28-5	12 30-5	11 54-4	5-4 4-5	11-4 9-4	17-4 14-4
55	12 13-8	12 15-8	11 40-3	5-5 4-4	11-5 9-3	17-5 14-1	55	12 28-8	12 30-8	11 54-6	5-5 4-5	11-5 9-5	17-5 14-4
56	12 14-0	12 16-0	11 40-6	5-6 4-5	11-6 9-4	17-6 14-2	56	12 29-0	12 31-1	11 54-9	5-6 4-6	11-6 9-6	17-6 14-5
57	12 14-3	12 16-3	11 40-8	5-7 4-6	11-7 9-5	17-7 14-3	57	12 29-3	12 31-3	11 55-1	5-7 4-7	11-7 9-7	17-7 14-6
58	12 14-5	12 16-5	11 41-0	5-8 4-7	11-8 9-5	17-8 14-4	58	12 29-5	12 31-6	11 55-4	5-8 4-8	11-8 9-7	17-8 14-7
59	12 14-8	12 16-8	11 41-3	5-9 4-8	11-9 9-6	17-9 14-5	59	12 29-8	12 31-8	11 55-6	5-9 4-9	11-9 9-8	17-9 14-8
60	12 15-0	12 17-0	11 41-5	6-0 4-9	12-0 9-7	18-0 14-6	60	12 30-0	12 32-1	11 55-8	6-0 5-0	12-0 9-9	18-0 14-9

50 ^m	SUN PLANETS	ARIES	MOON	ν or d	Corr ⁿ	ν or d	Corr ⁿ	ν or d	Corr ⁿ
s	o	'	o	'	o	'	o	'	
00	12 30.0	12 32.1	11 55.8	0.0	0.0	6.0	5.1	12.0	10.1
01	12 30.3	12 32.3	11 56.1	0.1	0.1	6.1	5.1	12.1	10.2
02	12 30.5	12 32.6	11 56.3	0.2	0.2	6.2	5.2	12.2	10.3
03	12 30.8	12 32.8	11 56.5	0.3	0.3	6.3	5.3	12.3	10.4
04	12 31.0	12 33.1	11 56.8	0.4	0.3	6.4	5.4	12.4	10.4
05	12 31.3	12 33.3	11 57.0	0.5	0.4	6.5	5.5	12.5	10.5
06	12 31.5	12 33.6	11 57.3	0.6	0.5	6.6	5.6	12.6	10.6
07	12 31.8	12 33.8	11 57.5	0.7	0.6	6.7	5.6	12.7	10.7
08	12 32.0	12 34.1	11 57.7	0.8	0.7	6.8	5.7	12.8	10.8
09	12 32.3	12 34.3	11 58.0	0.9	0.8	6.9	5.8	12.9	10.9
10	12 32.5	12 34.6	11 58.2	1.0	0.8	7.0	5.9	13.0	10.9
11	12 32.8	12 34.8	11 58.5	1.1	0.9	7.1	6.0	13.1	11.0
12	12 33.0	12 35.1	11 58.7	1.2	1.0	7.2	6.1	13.2	11.1
13	12 33.3	12 35.3	11 58.9	1.3	1.1	7.3	6.1	13.3	11.2
14	12 33.5	12 35.6	11 59.2	1.4	1.2	7.4	6.2	13.4	11.3
15	12 33.8	12 35.8	11 59.4	1.5	1.3	7.5	6.3	13.5	11.4
16	12 34.0	12 36.1	11 59.7	1.6	1.3	7.6	6.4	13.6	11.4
17	12 34.3	12 36.3	11 59.9	1.7	1.4	7.7	6.5	13.7	11.5
18	12 34.5	12 36.6	12 00.1	1.8	1.5	7.8	6.6	13.8	11.6
19	12 34.8	12 36.8	12 00.4	1.9	1.6	7.9	6.6	13.9	11.7
20	12 35.0	12 37.1	12 00.6	2.0	1.7	8.0	6.7	14.0	11.8
21	12 35.3	12 37.3	12 00.8	2.1	1.8	8.1	6.8	14.1	11.9
22	12 35.5	12 37.6	12 01.1	2.2	1.9	8.2	6.9	14.2	12.0
23	12 35.8	12 37.8	12 01.3	2.3	1.9	8.3	7.0	14.3	12.0
24	12 36.0	12 38.1	12 01.6	2.4	2.0	8.4	7.1	14.4	12.1
25	12 36.3	12 38.3	12 01.8	2.5	2.1	8.5	7.2	14.5	12.2
26	12 36.5	12 38.6	12 02.0	2.6	2.2	8.6	7.2	14.6	12.3
27	12 36.8	12 38.8	12 02.3	2.7	2.3	8.7	7.3	14.7	12.4
28	12 37.0	12 39.1	12 02.5	2.8	2.4	8.8	7.4	14.8	12.5
29	12 37.3	12 39.3	12 02.8	2.9	2.4	8.9	7.5	14.9	12.5
30	12 37.5	12 39.6	12 03.0	3.0	2.5	9.0	7.6	15.0	12.6
31	12 37.8	12 39.8	12 03.2	3.1	2.6	9.1	7.7	15.1	12.7
32	12 38.0	12 40.1	12 03.5	3.2	2.7	9.2	7.7	15.2	12.8
33	12 38.3	12 40.3	12 03.7	3.3	2.8	9.3	7.8	15.3	12.9
34	12 38.5	12 40.6	12 03.9	3.4	2.9	9.4	7.9	15.4	13.0
35	12 38.8	12 40.8	12 04.2	3.5	2.9	9.5	8.0	15.5	13.0
36	12 39.0	12 41.1	12 04.4	3.6	3.0	9.6	8.1	15.6	13.1
37	12 39.3	12 41.3	12 04.7	3.7	3.1	9.7	8.2	15.7	13.2
38	12 39.5	12 41.6	12 04.9	3.8	3.2	9.8	8.2	15.8	13.3
39	12 39.8	12 41.8	12 05.1	3.9	3.3	9.9	8.3	15.9	13.4
40	12 40.0	12 42.1	12 05.4	4.0	3.4	10.0	8.4	16.0	13.5
41	12 40.3	12 42.3	12 05.6	4.1	3.5	10.1	8.5	16.1	13.6
42	12 40.5	12 42.6	12 05.9	4.2	3.5	10.2	8.6	16.2	13.6
43	12 40.8	12 42.8	12 06.1	4.3	3.6	10.3	8.7	16.3	13.7
44	12 41.0	12 43.1	12 06.3	4.4	3.7	10.4	8.8	16.4	13.8
45	12 41.3	12 43.3	12 06.6	4.5	3.8	10.5	8.8	16.5	13.9
46	12 41.5	12 43.6	12 06.8	4.6	3.9	10.6	8.9	16.6	14.0
47	12 41.8	12 43.8	12 07.0	4.7	4.0	10.7	9.0	16.7	14.1
48	12 42.0	12 44.1	12 07.3	4.8	4.0	10.8	9.1	16.8	14.1
49	12 42.3	12 44.3	12 07.5	4.9	4.1	10.9	9.2	16.9	14.2
50	12 42.5	12 44.6	12 07.8	5.0	4.2	11.0	9.3	17.0	14.3
51	12 42.8	12 44.8	12 08.0	5.1	4.3	11.1	9.3	17.1	14.4
52	12 43.0	12 45.1	12 08.2	5.2	4.4	11.2	9.4	17.2	14.5
53	12 43.3	12 45.3	12 08.5	5.3	4.5	11.3	9.5	17.3	14.6
54	12 43.5	12 45.6	12 08.7	5.4	4.5	11.4	9.6	17.4	14.6
55	12 43.8	12 45.8	12 09.0	5.5	4.6	11.5	9.7	17.5	14.7
56	12 44.0	12 46.1	12 09.2	5.6	4.7	11.6	9.8	17.6	14.8
57	12 44.3	12 46.3	12 09.4	5.7	4.8	11.7	9.8	17.7	14.9
58	12 44.5	12 46.6	12 09.7	5.8	4.9	11.8	9.9	17.8	15.0
59	12 44.8	12 46.8	12 09.9	5.9	5.0	11.9	10.0	17.9	15.1
60	12 45.0	12 47.1	12 10.2	6.0	5.1	12.0	10.1	18.0	15.2

m	SUN	ARIES	MOON	v	v	v
51	PLANETS			or Corr ⁿ	or Corr ⁿ	or Corr ⁿ
				d	d	d
s	o	o	o	o	o	o
00	12 45.0	12 47.1	12 10.2	0.0	0.0	5.2
01	12 45.3	12 47.3	12 10.4	0.1	0.1	5.2
02	12 45.5	12 47.6	12 10.6	0.2	0.2	5.3
03	12 45.8	12 47.8	12 10.9	0.3	0.3	5.4
04	12 46.0	12 48.1	12 11.1	0.4	0.3	5.5
05	12 46.3	12 48.3	12 11.3	0.5	0.4	5.6
06	12 46.5	12 48.6	12 11.6	0.6	0.5	5.7
07	12 46.8	12 48.8	12 11.8	0.7	0.6	5.8
08	12 47.0	12 49.1	12 12.1	0.8	0.7	5.8
09	12 47.3	12 49.4	12 12.3	0.9	0.8	5.9
10	12 47.5	12 49.6	12 12.5	1.0	0.9	6.0
11	12 47.8	12 49.9	12 12.8	1.1	0.9	6.1
12	12 48.0	12 50.1	12 13.0	1.2	1.0	6.2
13	12 48.3	12 50.4	12 13.3	1.3	1.1	6.3
14	12 48.5	12 50.6	12 13.5	1.4	1.2	6.4
15	12 48.8	12 50.9	12 13.7	1.5	1.3	6.4
16	12 49.0	12 51.1	12 14.0	1.6	1.4	6.5
17	12 49.3	12 51.4	12 14.2	1.7	1.5	6.7
18	12 49.5	12 51.6	12 14.4	1.8	1.5	6.7
19	12 49.8	12 51.9	12 14.7	1.9	1.6	6.8
20	12 50.0	12 52.1	12 14.9	2.0	1.7	6.9
21	12 50.3	12 52.4	12 15.2	2.1	1.8	7.0
22	12 50.5	12 52.6	12 15.4	2.2	1.9	7.0
23	12 50.8	12 52.9	12 15.6	2.3	2.0	7.1
24	12 51.0	12 53.1	12 15.9	2.4	2.1	7.2
25	12 51.3	12 53.4	12 16.1	2.5	2.1	7.3
26	12 51.5	12 53.6	12 16.4	2.6	2.2	7.4
27	12 51.8	12 53.9	12 16.6	2.7	2.3	7.5
28	12 52.0	12 54.1	12 16.8	2.8	2.4	7.6
29	12 52.3	12 54.4	12 17.1	2.9	2.5	7.6
30	12 52.5	12 54.6	12 17.3	3.0	2.6	7.7
31	12 52.8	12 54.9	12 17.5	3.1	2.7	7.8
32	12 53.0	12 55.1	12 17.8	3.2	2.7	7.9
33	12 53.3	12 55.4	12 18.0	3.3	2.8	8.0
34	12 53.5	12 55.6	12 18.3	3.4	2.9	8.1
35	12 53.8	12 55.9	12 18.5	3.5	3.0	8.2
36	12 54.0	12 56.1	12 18.7	3.6	3.1	8.2
37	12 54.3	12 56.4	12 19.0	3.7	3.2	8.3
38	12 54.5	12 56.6	12 19.2	3.8	3.3	8.4
39	12 54.8	12 56.9	12 19.5	3.9	3.3	8.5
40	12 55.0	12 57.1	12 19.7	4.0	3.4	8.6
41	12 55.3	12 57.4	12 19.9	4.1	3.5	10.1
42	12 55.5	12 57.6	12 20.2	4.2	3.6	10.2
43	12 55.8	12 57.9	12 20.4	4.3	3.7	10.3
44	12 56.0	12 58.1	12 20.6	4.4	3.8	10.4
45	12 56.3	12 58.4	12 20.9	4.5	3.9	10.5
46	12 56.5	12 58.6	12 21.1	4.6	3.9	10.6
47	12 56.8	12 58.9	12 21.4	4.7	4.0	10.7
48	12 57.0	12 59.1	12 21.6	4.8	4.1	10.8
49	12 57.3	12 59.4	12 21.8	4.9	4.2	10.9
50	12 57.5	12 59.6	12 22.1	5.0	4.3	11.0
51	12 57.8	12 59.9	12 22.3	5.1	4.4	11.1
52	12 58.0	13 00.1	12 22.6	5.2	4.5	11.2
53	12 58.3	13 00.4	12 22.8	5.3	4.5	11.3
54	12 58.5	13 00.6	12 23.0	5.4	4.6	11.4
55	12 58.8	13 00.9	12 23.3	5.5	4.7	11.5
56	12 59.0	13 01.1	12 23.5	5.6	4.8	11.6
57	12 59.3	13 01.4	12 23.8	5.7	4.9	11.7
58	12 59.5	13 01.6	12 24.0	5.8	5.0	11.8
59	12 59.8	13 01.9	12 24.2	5.9	5.1	11.9
60	13 00.0	13 02.1	12 24.5	6.0	5.2	12.0

52 ^m	SUN PLANETS	ARIES	MOON	<i>v</i> or <i>d</i>	Corr ⁿ	<i>v</i> or <i>d</i>	Corr ⁿ	<i>v</i> or <i>d</i>	Corr ⁿ
<i>s</i>	<i>o</i>	<i>o</i>	<i>o</i>	<i>o</i>	<i>o</i>	<i>o</i>	<i>o</i>	<i>o</i>	<i>o</i>
00	13 00.0	13 02.1	12 24.5	0.0	0.0	6.0	5.3	12.0	10.5
01	13 00.3	13 02.4	12 24.7	0.1	0.1	6.1	5.3	12.1	10.6
02	13 00.5	13 02.6	12 24.9	0.2	0.2	6.2	5.4	12.2	10.7
03	13 00.8	13 02.9	12 25.2	0.3	0.3	6.3	5.5	12.3	10.8
04	13 01.0	13 03.1	12 25.4	0.4	0.4	6.4	5.6	12.4	10.9
05	13 01.3	13 03.4	12 25.7	0.5	0.4	6.5	5.7	12.5	10.9
06	13 01.5	13 03.6	12 25.9	0.6	0.5	6.6	5.8	12.6	11.0
07	13 01.8	13 03.9	12 26.1	0.7	0.6	6.7	5.9	12.7	11.1
08	13 02.0	13 04.1	12 26.4	0.8	0.7	6.8	6.0	12.8	11.2
09	13 02.3	13 04.4	12 26.6	0.9	0.8	6.9	6.0	12.9	11.3
10	13 02.5	13 04.6	12 26.9	1.0	0.9	7.0	6.1	13.0	11.4
11	13 02.8	13 04.9	12 27.1	1.1	1.0	7.1	6.2	13.1	11.5
12	13 03.0	13 05.1	12 27.3	1.2	1.1	7.2	6.3	13.2	11.6
13	13 03.3	13 05.4	12 27.6	1.3	1.1	7.3	6.4	13.3	11.6
14	13 03.5	13 05.6	12 27.8	1.4	1.2	7.4	6.5	13.4	11.7
15	13 03.8	13 05.9	12 28.0	1.5	1.3	7.5	6.6	13.5	11.8
16	13 04.0	13 06.1	12 28.3	1.6	1.4	7.6	6.7	13.6	11.9
17	13 04.3	13 06.4	12 28.5	1.7	1.5	7.7	6.7	13.7	12.0
18	13 04.5	13 06.6	12 28.8	1.8	1.6	7.8	6.8	13.8	12.1
19	13 04.8	13 06.9	12 29.0	1.9	1.7	7.9	6.9	13.9	12.2
20	13 05.0	13 07.1	12 29.2	2.0	1.8	8.0	7.0	14.0	12.3
21	13 05.3	13 07.4	12 29.5	2.1	1.8	8.1	7.1	14.1	12.3
22	13 05.5	13 07.7	12 29.7	2.2	1.9	8.2	7.2	14.2	12.4
23	13 05.8	13 07.9	12 30.0	2.3	2.0	8.3	7.3	14.3	12.5
24	13 06.0	13 08.2	12 30.2	2.4	2.1	8.4	7.4	14.4	12.6
25	13 06.3	13 08.4	12 30.4	2.5	2.2	8.5	7.4	14.5	12.7
26	13 06.5	13 08.7	12 30.7	2.6	2.3	8.6	7.5	14.6	12.8
27	13 06.8	13 08.9	12 30.9	2.7	2.4	8.7	7.6	14.7	12.9
28	13 07.0	13 09.2	12 31.1	2.8	2.5	8.8	7.7	14.8	13.0
29	13 07.3	13 09.4	12 31.4	2.9	2.5	8.9	7.8	14.9	13.0
30	13 07.5	13 09.7	12 31.6	3.0	2.6	9.0	7.9	15.0	13.1
31	13 07.8	13 09.9	12 31.9	3.1	2.7	9.1	8.0	15.1	13.2
32	13 08.0	13 10.2	12 32.1	3.2	2.8	9.2	8.1	15.2	13.3
33	13 08.3	13 10.4	12 32.3	3.3	2.9	9.3	8.1	15.3	13.4
34	13 08.5	13 10.7	12 32.6	3.4	3.0	9.4	8.2	15.4	13.5
35	13 08.8	13 10.9	12 32.8	3.5	3.1	9.5	8.3	15.5	13.6
36	13 09.0	13 11.2	12 33.1	3.6	3.2	9.6	8.4	15.6	13.7
37	13 09.3	13 11.4	12 33.3	3.7	3.2	9.7	8.5	15.7	13.7
38	13 09.5	13 11.7	12 33.5	3.8	3.3	9.8	8.6	15.8	13.8
39	13 09.8	13 11.9	12 33.8	3.9	3.4	9.9	8.7	15.9	13.9
40	13 10.0	13 12.2	12 34.0	4.0	3.5	10.0	8.8	16.0	14.0
41	13 10.3	13 12.4	12 34.2	4.1	3.6	10.1	8.8	16.1	14.1
42	13 10.5	13 12.7	12 34.5	4.2	3.7	10.2	8.9	16.2	14.2
43	13 10.8	13 12.9	12 34.7	4.3	3.8	10.3	9.0	16.3	14.3
44	13 11.0	13 13.2	12 35.0	4.4	3.9	10.4	9.1	16.4	14.4
45	13 11.3	13 13.4	12 35.2	4.5	3.9	10.5	9.2	16.5	14.4
46	13 11.5	13 13.7	12 35.4	4.6	4.0	10.6	9.3	16.6	14.5
47	13 11.8	13 13.9	12 35.7	4.7	4.1	10.7	9.4	16.7	14.6
48	13 12.0	13 14.2	12 35.9	4.8	4.2	10.8	9.5	16.8	14.7
49	13 12.3	13 14.4	12 36.2	4.9	4.3	10.9	9.5	16.9	14.8
50	13 12.5	13 14.7	12 36.4	5.0	4.4	11.0	9.6	17.0	14.9
51	13 12.8	13 14.9	12 36.6	5.1	4.5	11.1	9.7	17.1	15.0
52	13 13.0	13 15.2	12 36.9	5.2	4.6	11.2	9.8	17.2	15.1
53	13 13.3	13 15.4	12 37.1	5.3	4.6	11.3	9.9	17.3	15.1
54	13 13.5	13 15.7	12 37.4	5.4	4.7	11.4	10.0	17.4	15.2
55	13 13.8	13 15.9	12 37.6	5.5	4.8	11.5	10.1	17.5	15.3
56	13 14.0	13 16.2	12 37.8	5.6	4.9	11.6	10.2	17.6	15.4
57	13 14.3	13 16.4	12 38.1	5.7	5.0	11.7	10.2	17.7	15.5
58	13 14.5	13 16.7	12 38.3	5.8	5.1	11.8	10.3	17.8	15.6
59	13 14.8	13 16.9	12 38.5	5.9	5.2	11.9	10.4	17.9	15.7
60	13 15.0	13 17.2	12 38.8	6.0	5.3	12.0	10.5	18.0	15.8

53 ^m	SUN PLANETS	ARIES	MOON	<i>v</i> or <i>d</i>	Corr ⁿ	<i>v</i> or <i>d</i>	Corr ⁿ	<i>v</i> or <i>d</i>	Corr ⁿ
<i>s</i>	<i>o</i>	<i>o</i>	<i>o</i>	<i>o</i>	<i>o</i>	<i>o</i>	<i>o</i>	<i>o</i>	<i>o</i>
00	13 15.0	13 17.2	12 38.8	0.0	0.0	6.0	5.4	12.0	10.7
01	13 15.3	13 17.4	12 39.0	0.1	0.1	6.1	5.4	12.1	10.8
02	13 15.5	13 17.7	12 39.3	0.2	0.2	6.2	5.5	12.2	10.9
03	13 15.8	13 17.9	12 39.5	0.3	0.3	6.3	5.6	12.3	11.0
04	13 16.0	13 18.2	12 39.7	0.4	0.4	6.4	5.7	12.4	11.1
05	13 16.3	13 18.4	12 40.0	0.5	0.4	6.5	5.8	12.5	11.1
06	13 16.5	13 18.7	12 40.2	0.6	0.5	6.6	5.9	12.6	11.2
07	13 16.8	13 18.9	12 40.5	0.7	0.6	6.7	6.0	12.7	11.3
08	13 17.0	13 19.2	12 40.7	0.8	0.7	6.8	6.1	12.8	11.4
09	13 17.3	13 19.4	12 40.9	0.9	0.8	6.9	6.2	12.9	11.5
10	13 17.5	13 19.7	12 41.2	1.0	0.9	7.0	6.2	13.0	11.6
11	13 17.8	13 19.9	12 41.4	1.1	1.0	7.1	6.3	13.1	11.7
12	13 18.0	13 20.2	12 41.6	1.2	1.1	7.2	6.4	13.2	11.8
13	13 18.3	13 20.4	12 41.9	1.3	1.2	7.3	6.5	13.3	11.9
14	13 18.5	13 20.7	12 42.1	1.4	1.2	7.4	6.6	13.4	11.9
15	13 18.8	13 20.9	12 42.4	1.5	1.3	7.5	6.7	13.5	12.0
16	13 19.0	13 21.2	12 42.6	1.6	1.4	7.6	6.8	13.6	12.1
17	13 19.3	13 21.4	12 42.8	1.7	1.5	7.7	6.9	13.7	12.2
18	13 19.5	13 21.7	12 43.1	1.8	1.6	7.8	7.0	13.8	12.3
19	13 19.8	13 21.9	12 43.3	1.9	1.7	7.9	7.0	13.9	12.4
20	13 20.0	13 22.2	12 43.6	2.0	1.8	8.0	7.1	14.0	12.5
21	13 20.3	13 22.4	12 43.8	2.1	1.9	8.1	7.2	14.1	12.6
22	13 20.5	13 22.7	12 44.0	2.2	2.0	8.2	7.3	14.2	12.7
23	13 20.8	13 22.9	12 44.3	2.3	2.1	8.3	7.4	14.3	12.8
24	13 21.0	13 23.2	12 44.5	2.4	2.1	8.4	7.5	14.4	12.8
25	13 21.3	13 23.4	12 44.7	2.5	2.2	8.5	7.6	14.5	12.9
26	13 21.5	13 23.7	12 45.0	2.6	2.3	8.6	7.7	14.6	13.0
27	13 21.8	13 23.9	12 45.2	2.7	2.4	8.7	7.8	14.7	13.1
28	13 22.0	13 24.2	12 45.5	2.8	2.5	8.8	7.8	14.8	13.2
29	13 22.3	13 24.4	12 45.7	2.9	2.6	8.9	7.9	14.9	13.3
30	13 22.5	13 24.7	12 45.9	3.0	2.7	9.0	8.0	15.0	13.4
31	13 22.8	13 24.9	12 46.2	3.1	2.8	9.1	8.1	15.1	13.5
32	13 23.0	13 25.2	12 46.4	3.2	2.9	9.2	8.2	15.2	13.6
33	13 23.3	13 25.4	12 46.7	3.3	2.9	9.3	8.3	15.3	13.6
34	13 23.5	13 25.7	12 46.9	3.4	3.0	9.4	8.4	15.4	13.7
35	13 23.8	13 26.0	12 47.1	3.5	3.1	9.5	8.5	15.5	13.8
36	13 24.0	13 26.2	12 47.4	3.6	3.2	9.6	8.6	15.6	13.9
37	13 24.3	13 26.5	12 47.6	3.7	3.3	9.7	8.6	15.7	14.0
38	13 24.5	13 26.7	12 47.9	3.8	3.4	9.8	8.7	15.8	14.1
39	13 24.8	13 27.0	12 48.1	3.9	3.5	9.9	8.8	15.9	14.2
40	13 25.0	13 27.2	12 48.3	4.0	3.6	10.0	8.9	16.0	14.3
41	13 25.3	13 27.5	12 48.6	4.1	3.7	10.1	9.0	16.1	14.4
42	13 25.5	13 27.7	12 48.8	4.2	3.7	10.2	9.1	16.2	14.4
43	13 25.8	13 28.0	12 49.0	4.3	3.8	10.3	9.2	16.3	14.5
44	13 26.0	13 28.2	12 49.3	4.4	3.9	10.4	9.3	16.4	14.6
45	13 26.3	13 28.5	12 49.5	4.5	4.0	10.5	9.4	16.5	14.7
46	13 26.5	13 28.7	12 49.8	4.6	4.1	10.6	9.5	16.6	14.8
47	13 26.8	13 29.0	12 50.0	4.7	4.2	10.7	9.5	16.7	14.9
48	13 27.0	13 29.2	12 50.2	4.8	4.3	10.8	9.6	16.8	15.0
49	13 27.3	13 29.5	12 50.5	4.9	4.4	10.9	9.7	16.9	15.1
50	13 27.5	13 29.7	12 50.7	5.0	4.5	11.0	9.8	17.0	15.2
51	13 27.8	13 30.0	12 51.0	5.1	4.5	11.1	9.9	17.1	15.2
52	13 28.0	13 30.2	12 51.2	5.2	4.6	11.2	10.0	17.2	15.3
53	13 28.3	13 30.5	12 51.4	5.3	4.7	11.3	10.1	17.3	15.4
54	13 28.5	13 30.7	12 51.7	5.4	4.8	11.4	10.2	17.4	15.5
55	13 28.8	13 31.0	12 51.9	5.5	4.9	11.5	10.3	17.5	15.6
56	13 29.0	13 31.2	12 52.1	5.6	5.0	11.6	10.3	17.6	15.7
57	13 29.3	13 31.5	12 52.4	5.7	5.1	11.7	10.4	17.7	15.8
58	13 29.5	13 31.7	12 52.6	5.8	5.2	11.8	10.5	17.8	15.9
59	13 29.8	13 32.0	12 52.9	5.9	5.3	11.9	10.6	17.9	16.0
60	13 30.0	13 32.2	12 53.1	6.0	5.4	12.0	10.7	18.0	16.1

54 ^m	SUN PLANETS	ARIES	MOON	v or d	Corr ⁿ	v or d	Corr ⁿ	v or d	Corr ⁿ	55 ^m	SUN PLANETS	ARIES	MOON	v or d	Corr ⁿ	v or d	Corr ⁿ	v or d	Corr ⁿ
s	o	i	o	i		i		i		s	o	i	o	i		i		i	
00	13 30.0	13 32.2	12 53.1	0.0	0.0	6.0	5.5	12.0	10.9	00	13 45.0	13 47.3	13 07.4	0.0	0.0	6.0	5.6	12.0	11.1
01	13 30.3	13 32.5	12 53.3	0.1	0.1	6.1	5.5	12.1	11.0	01	13 45.3	13 47.5	13 07.7	0.1	0.1	6.1	5.6	12.1	11.2
02	13 30.5	13 32.7	12 53.6	0.2	0.2	6.2	5.6	12.2	11.1	02	13 45.5	13 47.8	13 07.9	0.2	0.2	6.2	5.7	12.2	11.3
03	13 30.8	13 33.0	12 53.8	0.3	0.3	6.3	5.7	12.3	11.2	03	13 45.8	13 48.0	13 08.1	0.3	0.3	6.3	5.8	12.3	11.4
04	13 31.0	13 33.2	12 54.1	0.4	0.4	6.4	5.8	12.4	11.3	04	13 46.0	13 48.3	13 08.4	0.4	0.4	6.4	5.9	12.4	11.5
05	13 31.3	13 33.5	12 54.3	0.5	0.5	6.5	5.9	12.5	11.4	05	13 46.3	13 48.5	13 08.6	0.5	0.5	6.5	6.0	12.5	11.6
06	13 31.5	13 33.7	12 54.5	0.6	0.5	6.6	6.0	12.6	11.4	06	13 46.5	13 48.8	13 08.8	0.6	0.6	6.6	6.1	12.6	11.7
07	13 31.8	13 34.0	12 54.8	0.7	0.6	6.7	6.1	12.7	11.5	07	13 46.8	13 49.0	13 09.1	0.7	0.6	6.7	6.2	12.7	11.7
08	13 32.0	13 34.2	12 55.0	0.8	0.7	6.8	6.2	12.8	11.6	08	13 47.0	13 49.3	13 09.3	0.8	0.7	6.8	6.3	12.8	11.8
09	13 32.3	13 34.5	12 55.2	0.9	0.8	6.9	6.3	12.9	11.7	09	13 47.3	13 49.5	13 09.6	0.9	0.8	6.9	6.4	12.9	11.9
10	13 32.5	13 34.7	12 55.5	1.0	0.9	7.0	6.4	13.0	11.8	10	13 47.5	13 49.8	13 09.8	1.0	0.9	7.0	6.5	13.0	12.0
11	13 32.8	13 35.0	12 55.7	1.1	1.0	7.1	6.4	13.1	11.9	11	13 47.8	13 50.0	13 10.0	1.1	1.0	7.1	6.6	13.1	12.1
12	13 33.0	13 35.2	12 56.0	1.2	1.1	7.2	6.5	13.2	12.0	12	13 48.0	13 50.3	13 10.3	1.2	1.1	7.2	6.7	13.2	12.2
13	13 33.3	13 35.5	12 56.2	1.3	1.2	7.3	6.6	13.3	12.1	13	13 48.3	13 50.5	13 10.5	1.3	1.2	7.3	6.8	13.3	12.3
14	13 33.5	13 35.7	12 56.4	1.4	1.3	7.4	6.7	13.4	12.2	14	13 48.5	13 50.8	13 10.8	1.4	1.3	7.4	6.8	13.4	12.4
15	13 33.8	13 36.0	12 56.7	1.5	1.4	7.5	6.8	13.5	12.3	15	13 48.8	13 51.0	13 11.0	1.5	1.4	7.5	6.9	13.5	12.5
16	13 34.0	13 36.2	12 56.9	1.6	1.5	7.6	6.9	13.6	12.4	16	13 49.0	13 51.3	13 11.2	1.6	1.5	7.6	7.0	13.6	12.6
17	13 34.3	13 36.5	12 57.2	1.7	1.5	7.7	7.0	13.7	12.4	17	13 49.3	13 51.5	13 11.5	1.7	1.6	7.7	7.1	13.7	12.7
18	13 34.5	13 36.7	12 57.4	1.8	1.6	7.8	7.1	13.8	12.5	18	13 49.5	13 51.8	13 11.7	1.8	1.7	7.8	7.2	13.8	12.8
19	13 34.8	13 37.0	12 57.6	1.9	1.7	7.9	7.2	13.9	12.6	19	13 49.8	13 52.0	13 12.0	1.9	1.8	7.9	7.3	13.9	12.9
20	13 35.0	13 37.2	12 57.9	2.0	1.8	8.0	7.3	14.0	12.7	20	13 50.0	13 52.3	13 12.2	2.0	1.9	8.0	7.4	14.0	13.0
21	13 35.3	13 37.5	12 58.1	2.1	1.9	8.1	7.4	14.1	12.8	21	13 50.3	13 52.5	13 12.4	2.1	1.9	8.1	7.5	14.1	13.0
22	13 35.5	13 37.7	12 58.3	2.2	2.0	8.2	7.4	14.2	12.9	22	13 50.5	13 52.8	13 12.7	2.2	2.0	8.2	7.6	14.2	13.1
23	13 35.8	13 38.0	12 58.6	2.3	2.1	8.3	7.5	14.3	13.0	23	13 50.8	13 53.0	13 12.9	2.3	2.1	8.3	7.7	14.3	13.2
24	13 36.0	13 38.2	12 58.8	2.4	2.2	8.4	7.6	14.4	13.1	24	13 51.0	13 53.3	13 13.1	2.4	2.2	8.4	7.8	14.4	13.3
25	13 36.3	13 38.5	12 59.1	2.5	2.3	8.5	7.7	14.5	13.2	25	13 51.3	13 53.5	13 13.4	2.5	2.3	8.5	7.9	14.5	13.4
26	13 36.5	13 38.7	12 59.3	2.6	2.4	8.6	7.8	14.6	13.3	26	13 51.5	13 53.8	13 13.6	2.6	2.4	8.6	8.0	14.6	13.5
27	13 36.8	13 39.0	12 59.5	2.7	2.5	8.7	7.9	14.7	13.4	27	13 51.8	13 54.0	13 13.9	2.7	2.5	8.7	8.0	14.7	13.6
28	13 37.0	13 39.2	12 59.8	2.8	2.5	8.8	8.0	14.8	13.4	28	13 52.0	13 54.3	13 14.1	2.8	2.6	8.8	8.1	14.8	13.7
29	13 37.3	13 39.5	13 00.0	2.9	2.6	8.9	8.1	14.9	13.5	29	13 52.3	13 54.5	13 14.3	2.9	2.7	8.9	8.2	14.9	13.8
30	13 37.5	13 39.7	13 00.3	3.0	2.7	9.0	8.2	15.0	13.6	30	13 52.5	13 54.8	13 14.6	3.0	2.8	9.0	8.3	15.0	13.9
31	13 37.8	13 40.0	13 00.5	3.1	2.8	9.1	8.3	15.1	13.7	31	13 52.8	13 55.0	13 14.8	3.1	2.9	9.1	8.4	15.1	14.0
32	13 38.0	13 40.2	13 00.7	3.2	2.9	9.2	8.4	15.2	13.8	32	13 53.0	13 55.3	13 15.1	3.2	3.0	9.2	8.5	15.2	14.1
33	13 38.3	13 40.5	13 01.0	3.3	3.0	9.3	8.4	15.3	13.9	33	13 53.3	13 55.5	13 15.3	3.3	3.1	9.3	8.6	15.3	14.2
34	13 38.5	13 40.7	13 01.2	3.4	3.1	9.4	8.5	15.4	14.0	34	13 53.5	13 55.8	13 15.5	3.4	3.1	9.4	8.7	15.4	14.2
35	13 38.8	13 41.0	13 01.5	3.5	3.2	9.5	8.6	15.5	14.1	35	13 53.8	13 56.0	13 15.8	3.5	3.2	9.5	8.8	15.5	14.3
36	13 39.0	13 41.2	13 01.7	3.6	3.3	9.6	8.7	15.6	14.2	36	13 54.0	13 56.3	13 16.0	3.6	3.3	9.6	8.9	15.6	14.4
37	13 39.3	13 41.5	13 01.9	3.7	3.4	9.7	8.8	15.7	14.3	37	13 54.3	13 56.5	13 16.2	3.7	3.4	9.7	9.0	15.7	14.5
38	13 39.5	13 41.7	13 02.2	3.8	3.5	9.8	8.9	15.8	14.4	38	13 54.5	13 56.8	13 16.5	3.8	3.5	9.8	9.1	15.8	14.6
39	13 39.8	13 42.0	13 02.4	3.9	3.5	9.9	9.0	15.9	14.4	39	13 54.8	13 57.0	13 16.7	3.9	3.6	9.9	9.2	15.9	14.7
40	13 40.0	13 42.2	13 02.6	4.0	3.6	10.0	9.1	16.0	14.5	40	13 55.0	13 57.3	13 17.0	4.0	3.7	10.0	9.3	16.0	14.8
41	13 40.3	13 42.5	13 02.9	4.1	3.7	10.1	9.2	16.1	14.6	41	13 55.3	13 57.5	13 17.2	4.1	3.8	10.1	9.3	16.1	14.9
42	13 40.5	13 42.7	13 03.1	4.2	3.8	10.2	9.3	16.2	14.7	42	13 55.5	13 57.8	13 17.4	4.2	3.9	10.2	9.4	16.2	15.0
43	13 40.8	13 43.0	13 03.4	4.3	3.9	10.3	9.4	16.3	14.8	43	13 55.8	13 58.0	13 17.7	4.3	4.0	10.3	9.5	16.3	15.1
44	13 41.0	13 43.2	13 03.6	4.4	4.0	10.4	9.4	16.4	14.9	44	13 56.0	13 58.3	13 17.9	4.4	4.1	10.4	9.6	16.4	15.2
45	13 41.3	13 43.5	13 03.8	4.5	4.1	10.5	9.5	16.5	15.0	45	13 56.3	13 58.5	13 18.2	4.5	4.2	10.5	9.7	16.5	15.3
46	13 41.5	13 43.7	13 04.1	4.6	4.2	10.6	9.6	16.6	15.1	46	13 56.5	13 58.8	13 18.4	4.6	4.3	10.6	9.8	16.6	15.4
47	13 41.8	13 44.0	13 04.3	4.7	4.3	10.7	9.7	16.7	15.2	47	13 56.8	13 59.0	13 18.6	4.7	4.3	10.7	9.9	16.7	15.4
48	13 42.0	13 44.3	13 04.6	4.8	4.4	10.8	9.8	16.8	15.3	48	13 57.0	13 59.3	13 18.9	4.8	4.4	10.8	10.0	16.8	15.5
49	13 42.3	13 44.5	13 04.8	4.9	4.5	10.9	9.9	16.9	15.4	49	13 57.3	13 59.5	13 19.1	4.9	4.5	10.9	10.1	16.9	15.6
50	13 42.5	13 44.8	13 05.0	5.0	4.5	11.0	10.0	17.0	15.4	50	13 57.5	13 59.8	13 19.3	5.0	4.6	11.0	10.2	17.0	15.7
51	13 42.8	13 45.0	13 05.3	5.1	4.6	11.1	10.1	17.1	15.5	51	13 57.8	14 00.0	13 19.6	5.1	4.7	11.1	10.3	17.1	15.8
52	13 43.0	13 45.3	13 05.5	5.2	4.7	11.2	10.2	17.2	15.6	52	13 58.0	14 00.3	13 19.8	5.2					

^m 56	SUN PLANETS	ARIES	MOON	ν or d	Corr ⁿ	ν or d	Corr ⁿ	ν or d	Corr ⁿ
00	14 00.0	14 02.3	13 21.7	0.0	0.0	6.0	5.7	12.0	11.3
01	14 00.3	14 02.6	13 22.0	0.1	0.1	6.1	5.7	12.1	11.4
02	14 00.5	14 02.8	13 22.2	0.2	0.2	6.2	5.8	12.2	11.5
03	14 00.8	14 03.1	13 22.4	0.3	0.3	6.3	5.9	12.3	11.6
04	14 01.0	14 03.3	13 22.7	0.4	0.4	6.4	6.0	12.4	11.7
05	14 01.3	14 03.6	13 22.9	0.5	0.5	6.5	6.1	12.5	11.8
06	14 01.5	14 03.8	13 23.2	0.6	0.6	6.6	6.2	12.6	11.9
07	14 01.8	14 04.1	13 23.4	0.7	0.7	6.7	6.3	12.7	12.0
08	14 02.0	14 04.3	13 23.6	0.8	0.8	6.8	6.4	12.8	12.1
09	14 02.3	14 04.6	13 23.9	0.9	0.8	6.9	6.5	12.9	12.1
10	14 02.5	14 04.8	13 24.1	1.0	0.9	7.0	6.6	13.0	12.2
11	14 02.8	14 05.1	13 24.4	1.1	1.0	7.1	6.7	13.1	12.3
12	14 03.0	14 05.3	13 24.6	1.2	1.1	7.2	6.8	13.2	12.4
13	14 03.3	14 05.6	13 24.8	1.3	1.2	7.3	6.9	13.3	12.5
14	14 03.5	14 05.8	13 25.1	1.4	1.3	7.4	7.0	13.4	12.6
15	14 03.8	14 06.1	13 25.3	1.5	1.4	7.5	7.1	13.5	12.7
16	14 04.0	14 06.3	13 25.6	1.6	1.5	7.6	7.2	13.6	12.8
17	14 04.3	14 06.6	13 25.8	1.7	1.6	7.7	7.3	13.7	12.9
18	14 04.5	14 06.8	13 26.0	1.8	1.7	7.8	7.3	13.8	13.0
19	14 04.8	14 07.1	13 26.3	1.9	1.8	7.9	7.4	13.9	13.1
20	14 05.0	14 07.3	13 26.5	2.0	1.9	8.0	7.5	14.0	13.2
21	14 05.3	14 07.6	13 26.7	2.1	2.0	8.1	7.6	14.1	13.3
22	14 05.5	14 07.8	13 27.0	2.2	2.1	8.2	7.7	14.2	13.4
23	14 05.8	14 08.1	13 27.2	2.3	2.2	8.3	7.8	14.3	13.5
24	14 06.0	14 08.3	13 27.5	2.4	2.3	8.4	7.9	14.4	13.6
25	14 06.3	14 08.6	13 27.7	2.5	2.4	8.5	8.0	14.5	13.7
26	14 06.5	14 08.8	13 27.9	2.6	2.4	8.6	8.1	14.6	13.7
27	14 06.8	14 09.1	13 28.2	2.7	2.5	8.7	8.2	14.7	13.8
28	14 07.0	14 09.3	13 28.4	2.8	2.6	8.8	8.3	14.8	13.9
29	14 07.3	14 09.6	13 28.7	2.9	2.7	8.9	8.4	14.9	14.0
30	14 07.5	14 09.8	13 28.9	3.0	2.8	9.0	8.5	15.0	14.1
31	14 07.8	14 10.1	13 29.1	3.1	2.9	9.1	8.6	15.1	14.2
32	14 08.0	14 10.3	13 29.4	3.2	3.0	9.2	8.7	15.2	14.3
33	14 08.3	14 10.6	13 29.6	3.3	3.1	9.3	8.8	15.3	14.4
34	14 08.5	14 10.8	13 29.8	3.4	3.2	9.4	8.9	15.4	14.5
35	14 08.8	14 11.1	13 30.1	3.5	3.3	9.5	8.9	15.5	14.6
36	14 09.0	14 11.3	13 30.3	3.6	3.4	9.6	9.0	15.6	14.7
37	14 09.3	14 11.6	13 30.6	3.7	3.5	9.7	9.1	15.7	14.8
38	14 09.5	14 11.8	13 30.8	3.8	3.6	9.8	9.2	15.8	14.9
39	14 09.8	14 12.1	13 31.0	3.9	3.7	9.9	9.3	15.9	15.0
40	14 10.0	14 12.3	13 31.3	4.0	3.8	10.0	9.4	16.0	15.1
41	14 10.3	14 12.6	13 31.5	4.1	3.9	10.1	9.5	16.1	15.2
42	14 10.5	14 12.8	13 31.8	4.2	4.0	10.2	9.6	16.2	15.3
43	14 10.8	14 13.1	13 32.0	4.3	4.0	10.3	9.7	16.3	15.3
44	14 11.0	14 13.3	13 32.2	4.4	4.1	10.4	9.8	16.4	15.4
45	14 11.3	14 13.6	13 32.5	4.5	4.2	10.5	9.9	16.5	15.5
46	14 11.5	14 13.8	13 32.7	4.6	4.3	10.6	10.0	16.6	15.6
47	14 11.8	14 14.1	13 32.9	4.7	4.4	10.7	10.1	16.7	15.7
48	14 12.0	14 14.3	13 33.2	4.8	4.5	10.8	10.2	16.8	15.8
49	14 12.3	14 14.6	13 33.4	4.9	4.6	10.9	10.3	16.9	15.9
50	14 12.5	14 14.8	13 33.7	5.0	4.7	11.0	10.4	17.0	16.0
51	14 12.8	14 15.1	13 33.9	5.1	4.8	11.1	10.5	17.1	16.1
52	14 13.0	14 15.3	13 34.1	5.2	4.9	11.2	10.5	17.2	16.2
53	14 13.3	14 15.6	13 34.4	5.3	5.0	11.3	10.6	17.3	16.3
54	14 13.5	14 15.8	13 34.6	5.4	5.1	11.4	10.7	17.4	16.4
55	14 13.8	14 16.1	13 34.9	5.5	5.2	11.5	10.8	17.5	16.5
56	14 14.0	14 16.3	13 35.1	5.6	5.3	11.6	10.9	17.6	16.6
57	14 14.3	14 16.6	13 35.3	5.7	5.4	11.7	11.0	17.7	16.7
58	14 14.5	14 16.8	13 35.6	5.8	5.5	11.8	11.1	17.8	16.8
59	14 14.8	14 17.1	13 35.8	5.9	5.6	11.9	11.2	17.9	16.9
60	14 15.0	14 17.3	13 36.1	6.0	5.7	12.0	11.3	18.0	17.0

^m 57	SUN PLANETS	ARIES	MOON	ν or d	Corr ⁿ	ν or d	Corr ⁿ	ν or d	Corr ⁿ
^s	°	°	°						
00	14 15.0	14 17.3	13 36.1	0.0	0.0	6.0	5.8	12.0	11.5
01	14 15.3	14 17.6	13 36.3	0.1	0.1	6.1	5.8	12.1	11.6
02	14 15.5	14 17.8	13 36.5	0.2	0.2	6.2	5.9	12.2	11.7
03	14 15.8	14 18.1	13 36.8	0.3	0.3	6.3	6.0	12.3	11.8
04	14 16.0	14 18.3	13 37.0	0.4	0.4	6.4	6.1	12.4	11.9
05	14 16.3	14 18.6	13 37.2	0.5	0.5	6.5	6.2	12.5	12.0
06	14 16.5	14 18.8	13 37.5	0.6	0.6	6.6	6.3	12.6	12.1
07	14 16.8	14 19.1	13 37.7	0.7	0.7	6.7	6.4	12.7	12.2
08	14 17.0	14 19.3	13 38.0	0.8	0.8	6.8	6.5	12.8	12.3
09	14 17.3	14 19.6	13 38.2	0.9	0.9	6.9	6.6	12.9	12.4
10	14 17.5	14 19.8	13 38.4	1.0	1.0	7.0	6.7	13.0	12.5
11	14 17.8	14 20.1	13 38.7	1.1	1.1	7.1	6.8	13.1	12.6
12	14 18.0	14 20.3	13 38.9	1.2	1.2	7.2	6.9	13.2	12.7
13	14 18.3	14 20.6	13 39.2	1.3	1.2	7.3	7.0	13.3	12.7
14	14 18.5	14 20.9	13 39.4	1.4	1.3	7.4	7.1	13.4	12.8
15	14 18.8	14 21.1	13 39.6	1.5	1.4	7.5	7.2	13.5	12.9
16	14 19.0	14 21.4	13 39.9	1.6	1.5	7.6	7.3	13.6	13.0
17	14 19.3	14 21.6	13 40.1	1.7	1.6	7.7	7.4	13.7	13.1
18	14 19.5	14 21.9	13 40.3	1.8	1.7	7.8	7.5	13.8	13.2
19	14 19.8	14 22.1	13 40.6	1.9	1.8	7.9	7.6	13.9	13.3
20	14 20.0	14 22.4	13 40.8	2.0	1.9	8.0	7.7	14.0	13.4
21	14 20.3	14 22.6	13 41.1	2.1	2.0	8.1	7.8	14.1	13.5
22	14 20.5	14 22.9	13 41.3	2.2	2.1	8.2	7.9	14.2	13.6
23	14 20.8	14 23.1	13 41.5	2.3	2.2	8.3	8.0	14.3	13.7
24	14 21.0	14 23.4	13 41.8	2.4	2.3	8.4	8.1	14.4	13.8
25	14 21.3	14 23.6	13 42.0	2.5	2.4	8.5	8.1	14.5	13.9
26	14 21.5	14 23.9	13 42.3	2.6	2.5	8.6	8.2	14.6	14.0
27	14 21.8	14 24.1	13 42.5	2.7	2.6	8.7	8.3	14.7	14.1
28	14 22.0	14 24.4	13 42.7	2.8	2.7	8.8	8.4	14.8	14.2
29	14 22.3	14 24.6	13 43.0	2.9	2.8	8.9	8.5	14.9	14.3
30	14 22.5	14 24.9	13 43.2	3.0	2.9	9.0	8.6	15.0	14.4
31	14 22.8	14 25.1	13 43.4	3.1	3.0	9.1	8.7	15.1	14.5
32	14 23.0	14 25.4	13 43.7	3.2	3.1	9.2	8.8	15.2	14.6
33	14 23.3	14 25.6	13 43.9	3.3	3.2	9.3	8.9	15.3	14.7
34	14 23.5	14 25.9	13 44.2	3.4	3.3	9.4	9.0	15.4	14.8
35	14 23.8	14 26.1	13 44.4	3.5	3.4	9.5	9.1	15.5	14.9
36	14 24.0	14 26.4	13 44.6	3.6	3.5	9.6	9.2	15.6	15.0
37	14 24.3	14 26.6	13 44.9	3.7	3.5	9.7	9.3	15.7	15.0
38	14 24.5	14 26.9	13 45.1	3.8	3.6	9.8	9.4	15.8	15.1
39	14 24.8	14 27.1	13 45.4	3.9	3.7	9.9	9.5	15.9	15.2
40	14 25.0	14 27.4	13 45.6	4.0	3.8	10.0	9.6	16.0	15.3
41	14 25.3	14 27.6	13 45.8	4.1	3.9	10.1	9.7	16.1	15.4
42	14 25.5	14 27.9	13 46.1	4.2	4.0	10.2	9.8	16.2	15.5
43	14 25.8	14 28.1	13 46.3	4.3	4.1	10.3	9.9	16.3	15.6
44	14 26.0	14 28.4	13 46.5	4.4	4.2	10.4	10.0	16.4	15.7
45	14 26.3	14 28.6	13 46.8	4.5	4.3	10.5	10.1	16.5	15.8
46	14 26.5	14 28.9	13 47.0	4.6	4.4	10.6	10.2	16.6	15.9
47	14 26.8	14 29.1	13 47.3	4.7	4.5	10.7	10.3	16.7	16.0
48	14 27.0	14 29.4	13 47.5	4.8	4.6	10.8	10.4	16.8	16.1
49	14 27.3	14 29.6	13 47.7	4.9	4.7	10.9	10.4	16.9	16.2
50	14 27.5	14 29.9	13 48.0	5.0	4.8	11.0	10.5	17.0	16.3
51	14 27.8	14 30.1	13 48.2	5.1	4.9	11.1	10.6	17.1	16.4
52	14 28.0	14 30.4	13 48.5	5.2	5.0	11.2	10.7	17.2	16.5
53	14 28.3	14 30.6	13 48.7	5.3	5.1	11.3	10.8	17.3	16.6
54	14 28.5	14 30.9	13 48.9	5.4	5.2	11.4	10.9	17.4	16.7
55	14 28.8	14 31.1	13 49.2	5.5	5.3	11.5	11.0	17.5	16.8
56	14 29.0	14 31.4	13 49.4	5.6	5.4	11.6	11.1	17.6	16.9
57	14 29.3	14 31.6	13 49.7	5.7	5.5	11.7	11.2	17.7	17.0
58	14 29.5	14 31.9	13 49.9	5.8	5.6	11.8	11.3	17.8	17.1
59	14 29.8	14 32.1	13 50.1	5.9	5.7	11.9	11.4	17.9	17.2
60	14 30.0	14 32.4	13 50.4	6.0	5.8	12.0	11.5	18.0	17.3

^m 58	SUN PLANETS	ARIES	MOON	ϑ or d	Corr ⁿ	ϑ or d	Corr ⁿ	ϑ or d	Corr ⁿ
^s 00	14 30.0	14 32.4	13 50.4	0.0	0.0	6.0	5.9	12.0	11.7
01	14 30.3	14 32.6	13 50.6	0.1	0.1	6.1	5.9	12.1	11.8
02	14 30.5	14 32.9	13 50.8	0.2	0.2	6.2	6.0	12.2	11.9
03	14 30.8	14 33.1	13 51.1	0.3	0.3	6.3	6.1	12.3	12.0
04	14 31.0	14 33.4	13 51.3	0.4	0.4	6.4	6.2	12.4	12.1
05	14 31.3	14 33.6	13 51.6	0.5	0.5	6.5	6.3	12.5	12.2
06	14 31.5	14 33.9	13 51.8	0.6	0.6	6.6	6.4	12.6	12.3
07	14 31.8	14 34.1	13 52.0	0.7	0.7	6.7	6.5	12.7	12.4
08	14 32.0	14 34.4	13 52.3	0.8	0.8	6.8	6.6	12.8	12.5
09	14 32.3	14 34.6	13 52.5	0.9	0.9	6.9	6.7	12.9	12.6
10	14 32.5	14 34.9	13 52.8	1.0	1.0	7.0	6.8	13.0	12.7
11	14 32.8	14 35.1	13 53.0	1.1	1.1	7.1	6.9	13.1	12.8
12	14 33.0	14 35.4	13 53.2	1.2	1.2	7.2	7.0	13.2	12.9
13	14 33.3	14 35.6	13 53.5	1.3	1.3	7.3	7.1	13.3	13.0
14	14 33.5	14 35.9	13 53.7	1.4	1.4	7.4	7.2	13.4	13.1
15	14 33.8	14 36.1	13 53.9	1.5	1.5	7.5	7.3	13.5	13.2
16	14 34.0	14 36.4	13 54.2	1.6	1.6	7.6	7.4	13.6	13.3
17	14 34.3	14 36.6	13 54.4	1.7	1.7	7.7	7.5	13.7	13.4
18	14 34.5	14 36.9	13 54.7	1.8	1.8	7.8	7.6	13.8	13.5
19	14 34.8	14 37.1	13 54.9	1.9	1.9	7.9	7.7	13.9	13.6
20	14 35.0	14 37.4	13 55.1	2.0	2.0	8.0	7.8	14.0	13.7
21	14 35.3	14 37.6	13 55.4	2.1	2.0	8.1	7.9	14.1	13.7
22	14 35.5	14 37.9	13 55.6	2.2	2.1	8.2	8.0	14.2	13.8
23	14 35.8	14 38.1	13 55.9	2.3	2.2	8.3	8.1	14.3	13.9
24	14 36.0	14 38.4	13 56.1	2.4	2.3	8.4	8.2	14.4	14.0
25	14 36.3	14 38.6	13 56.3	2.5	2.4	8.5	8.3	14.5	14.1
26	14 36.5	14 38.9	13 56.6	2.6	2.5	8.6	8.4	14.6	14.2
27	14 36.8	14 39.2	13 56.8	2.7	2.6	8.7	8.5	14.7	14.3
28	14 37.0	14 39.4	13 57.0	2.8	2.7	8.8	8.6	14.8	14.4
29	14 37.3	14 39.7	13 57.3	2.9	2.8	8.9	8.7	14.9	14.5
30	14 37.5	14 39.9	13 57.5	3.0	2.9	9.0	8.8	15.0	14.6
31	14 37.8	14 40.2	13 57.8	3.1	3.0	9.1	8.9	15.1	14.7
32	14 38.0	14 40.4	13 58.0	3.2	3.1	9.2	9.0	15.2	14.8
33	14 38.3	14 40.7	13 58.2	3.3	3.2	9.3	9.1	15.3	14.9
34	14 38.5	14 40.9	13 58.5	3.4	3.3	9.4	9.2	15.4	15.0
35	14 38.8	14 41.2	13 58.7	3.5	3.4	9.5	9.3	15.5	15.1
36	14 39.0	14 41.4	13 59.0	3.6	3.5	9.6	9.4	15.6	15.2
37	14 39.3	14 41.7	13 59.2	3.7	3.6	9.7	9.5	15.7	15.3
38	14 39.5	14 41.9	13 59.4	3.8	3.7	9.8	9.6	15.8	15.4
39	14 39.8	14 42.2	13 59.7	3.9	3.8	9.9	9.7	15.9	15.5
40	14 40.0	14 42.4	13 59.9	4.0	3.9	10.0	9.8	16.0	15.6
41	14 40.3	14 42.7	14 00.1	4.1	4.0	10.1	9.8	16.1	15.7
42	14 40.5	14 42.9	14 00.4	4.2	4.1	10.2	9.9	16.2	15.8
43	14 40.8	14 43.2	14 00.6	4.3	4.2	10.3	10.0	16.3	15.9
44	14 41.0	14 43.4	14 00.9	4.4	4.3	10.4	10.1	16.4	16.0
45	14 41.3	14 43.7	14 01.1	4.5	4.4	10.5	10.2	16.5	16.1
46	14 41.5	14 43.9	14 01.3	4.6	4.5	10.6	10.3	16.6	16.2
47	14 41.8	14 44.2	14 01.6	4.7	4.6	10.7	10.4	16.7	16.3
48	14 42.0	14 44.4	14 01.8	4.8	4.7	10.8	10.5	16.8	16.4
49	14 42.3	14 44.7	14 02.1	4.9	4.8	10.9	10.6	16.9	16.5
50	14 42.5	14 44.9	14 02.3	5.0	4.9	11.0	10.7	17.0	16.6
51	14 42.8	14 45.2	14 02.5	5.1	5.0	11.1	10.8	17.1	16.7
52	14 43.0	14 45.4	14 02.8	5.2	5.1	11.2	10.9	17.2	16.8
53	14 43.3	14 45.7	14 03.0	5.3	5.2	11.3	11.0	17.3	16.9
54	14 43.5	14 45.9	14 03.3	5.4	5.3	11.4	11.1	17.4	17.0
55	14 43.8	14 46.2	14 03.5	5.5	5.4	11.5	11.2	17.5	17.1
56	14 44.0	14 46.4	14 03.7	5.6	5.5	11.6	11.3	17.6	17.2
57	14 44.3	14 46.7	14 04.0	5.7	5.6	11.7	11.4	17.7	17.3
58	14 44.5	14 46.9	14 04.2	5.8	5.7	11.8	11.5	17.8	17.4
59	14 44.8	14 47.2	14 04.4	5.9	5.8	11.9	11.6	17.9	17.5
60	14 45.0	14 47.4	14 04.7	6.0	5.9	12.0	11.7	18.0	17.6

^m 59	SUN PLANETS	ARIES	MOON	ϑ or d	Corr ⁿ	ϑ or d	Corr ⁿ	ϑ or d	Corr ⁿ
^s 00	14 45.0	14 47.4	14 04.7	0.0	0.0	6.0	6.0	12.0	11.9
01	14 45.3	14 47.7	14 04.9	0.1	0.1	6.1	6.0	12.1	12.0
02	14 45.5	14 47.9	14 05.2	0.2	0.2	6.2	6.1	12.2	12.1
03	14 45.8	14 48.2	14 05.4	0.3	0.3	6.3	6.2	12.3	12.2
04	14 46.0	14 48.4	14 05.6	0.4	0.4	6.4	6.3	12.4	12.3
05	14 46.3	14 48.7	14 05.9	0.5	0.5	6.5	6.4	12.5	12.4
06	14 46.5	14 48.9	14 06.1	0.6	0.6	6.6	6.5	12.6	12.5
07	14 46.8	14 49.2	14 06.4	0.7	0.7	6.7	6.6	12.7	12.6
08	14 47.0	14 49.4	14 06.6	0.8	0.8	6.8	6.7	12.8	12.7
09	14 47.3	14 49.7	14 06.8	0.9	0.9	6.9	6.8	12.9	12.8
10	14 47.5	14 49.9	14 07.1	1.0	1.0	7.0	6.9	13.0	12.9
11	14 47.8	14 50.2	14 07.3	1.1	1.1	7.1	7.0	13.1	13.0
12	14 48.0	14 50.4	14 07.5	1.2	1.2	7.2	7.1	13.2	13.1
13	14 48.3	14 50.7	14 07.8	1.3	1.3	7.3	7.2	13.3	13.2
14	14 48.5	14 50.9	14 08.0	1.4	1.4	7.4	7.3	13.4	13.3
15	14 48.8	14 51.2	14 08.3	1.5	1.5	7.5	7.4	13.5	13.4
16	14 49.0	14 51.4	14 08.5	1.6	1.6	7.6	7.5	13.6	13.5
17	14 49.3	14 51.7	14 08.7	1.7	1.7	7.7	7.6	13.7	13.6
18	14 49.5	14 51.9	14 09.0	1.8	1.8	7.8	7.7	13.8	13.7
19	14 49.8	14 52.2	14 09.2	1.9	1.9	7.9	7.8	13.9	13.8
20	14 50.0	14 52.4	14 09.5	2.0	2.0	8.0	7.9	14.0	13.9
21	14 50.3	14 52.7	14 09.7	2.1	2.1	8.1	8.0	14.1	14.0
22	14 50.5	14 52.9	14 09.9	2.2	2.2	8.2	8.1	14.2	14.1
23	14 50.8	14 53.2	14 10.2	2.3	2.3	8.3	8.2	14.3	14.2
24	14 51.0	14 53.4	14 10.4	2.4	2.4	8.4	8.3	14.4	14.3
25	14 51.3	14 53.7	14 10.6	2.5	2.5	8.5	8.4	14.5	14.4
26	14 51.5	14 53.9	14 10.9	2.6	2.6	8.6	8.5	14.6	14.5
27	14 51.8	14 54.2	14 11.1	2.7	2.7	8.7	8.6	14.7	14.6
28	14 52.0	14 54.4	14 11.4	2.8	2.8	8.8	8.7	14.8	14.7
29	14 52.3	14 54.7	14 11.6	2.9	2.9	8.9	8.8	14.9	14.8
30	14 52.5	14 54.9	14 11.8	3.0	3.0	9.0	8.9	15.0	14.9
31	14 52.8	14 55.2	14 12.1	3.1	3.1	9.1	9.0	15.1	15.0
32	14 53.0	14 55.4	14 12.3	3.2	3.2	9.2	9.1	15.2	15.1
33	14 53.3	14 55.7	14 12.6	3.3	3.3	9.3	9.2	15.3	15.2
34	14 53.5	14 55.9	14 12.8	3.4	3.4	9.4	9.3	15.4	15.3
35	14 53.8	14 56.2	14 13.0	3.5	3.5	9.5	9.4	15.5	15.4
36	14 54.0	14 56.4	14 13.3	3.6	3.6	9.6	9.5	15.6	15.5
37	14 54.3	14 56.7	14 13.5	3.7	3.7	9.7	9.6	15.7	15.6
38	14 54.5	14 56.9	14 13.8	3.8	3.8	9.8	9.7	15.8	15.7
39	14 54.8	14 57.2	14 14.0	3.9	3.9	9.9	9.8	15.9	15.8
40	14 55.0	14 57.5	14 14.2	4.0	4.0	10.0	9.9	16.0	15.9
41	14 55.3	14 57.7	14 14.5	4.1	4.1	10.1	10.0	16.1	16.0
42	14 55.5	14 58.0	14 14.7	4.2	4.2	10.2	10.1	16.2	16.1
43	14 55.8	14 58.2	14 14.9	4.3	4.3	10.3	10.2	16.3	16.2
44	14 56.0	14 58.5	14 15.2	4.4	4.4	10.4	10.3	16.4	16.3
45	14 56.3	14 58.7	14 15.4	4.5	4.5	10.5	10.4	16.5	16.4
46	14 56.5	14 59.0	14 15.7	4.6	4.6	10.6	10.5	16.6	16.5
47	14 56.8	14 59.2	14 15.9	4.7	4.7	10.7	10.6	16.7	16.6
48	14 57.0	14 59.5	14 16.1	4.8	4.8	10.8	10.7	16.8	16.7
49	14 57.3	14 59.7	14 16.4	4.9	4.9	10.9	10.8	16.9	16.8
50	14 57.5	15 00.0	14 16.6	5.0	5.0	11.0	10.9	17.0	16.9
51	14 57.8	15 00.2	14 16.9	5.1	5.1	11.1	11.0	17.1	17.0
52	14 58.0	15 00.5	14 17.1	5.2	5.2	11.2	11.1	17.2	17.1
53	14 58.3	15 00.7	14 17.3	5.3	5.3	11.3	11.2	17.3	17.2
54	14 58.5	15 01.0	14 17.6	5.4	5.4	11.4	11.3	17.4	17.3
55	14 58.8	15 01.2	14 17.8	5.5	5.5	11.5	11.4	17.5	17.4
56	14 59.0	15 01.5	14 18.0	5.6	5.6	11.6	11.5	17.6	17.5
57	14 59.3	15 01.7	14 18.3	5.7	5.7	11.7	11.6	17.7	17.6
58	14 59.5	15 02.0	14 18.5	5.8	5.8	11.8	11.7	17.8	17.7
59	14 59.8	15 02.2	14 18.8	5.9	5.9	11.9	11.8	17.9	17.8
60	15 00.0	15 02.5	14 19.0	6.0	6.0	12.0	11.9	18.0	17.9

TABLES FOR INTERPOLATING SUNRISE, MOONRISE, ETC.

TABLE I—FOR LATITUDE

Tabular Interval			Difference between the times for consecutive latitudes															
10°	5°	2°	5 ^m	10 ^m	15 ^m	20 ^m	25 ^m	30 ^m	35 ^m	40 ^m	45 ^m	50 ^m	55 ^m	60 ^m	1 ^h 05 ^m	1 ^h 10 ^m	1 ^h 15 ^m	1 ^h 20 ^m
°	'	°	'	°	'	m	m	m	m	m	m	m	m	m	h	m	h	m
0	30	0	15	0	06	0	0	1	1	1	1	2	2	2	0	02	0	02
1	00	0	30	0	12	0	1	1	2	2	3	3	3	4	4	4	5	5
1	30	0	45	0	18	1	1	2	3	3	4	4	5	5	6	7	7	7
2	00	1	00	0	24	1	2	3	4	5	5	6	7	7	8	9	10	10
2	30	1	15	0	30	1	2	4	5	6	7	8	9	9	10	11	12	13
3	00	1	30	0	36	1	3	4	6	7	8	9	10	11	12	13	14	15
3	30	1	45	0	42	2	3	5	7	8	10	11	12	13	14	16	17	18
4	00	2	00	0	48	2	4	6	8	9	11	13	14	15	16	18	19	20
4	30	2	15	0	54	2	4	7	9	11	13	15	16	18	19	21	22	23
5	00	2	30	1	00	2	5	7	10	12	14	16	18	20	22	23	25	26
5	30	2	45	1	06	3	5	8	11	13	16	18	20	22	24	26	28	29
6	00	3	00	1	12	3	6	9	12	14	17	20	22	24	26	29	31	32
6	30	3	15	1	18	3	6	10	13	16	19	22	24	26	29	31	34	36
7	00	3	30	1	24	3	7	10	14	17	20	23	26	29	31	34	37	39
7	30	3	45	1	30	4	7	11	15	18	22	25	28	31	34	37	40	43
8	00	4	00	1	36	4	8	12	16	20	23	27	30	34	37	41	44	47
8	30	4	15	1	42	4	8	13	17	21	25	29	33	36	40	44	48	51
9	00	4	30	1	48	4	9	13	18	22	27	31	35	39	43	47	52	55
9	30	4	45	1	54	5	9	14	19	24	28	33	38	42	47	51	56	58
10	00	5	00	2	00	5	10	15	20	25	30	35	40	45	50	55	60	61

Table I is for interpolating the L.M.T. of sunrise, twilight, moonrise, etc., for latitude. It is to be entered, in the appropriate column on the left, with the difference between true latitude and the nearest tabular latitude which is *less* than the true latitude; and with the argument at the top which is the nearest value of the difference between the times for the tabular latitude and the next higher one; the correction so obtained is applied to the time for the tabular latitude; the sign of the correction can be seen by inspection. It is to be noted that the interpolation is not linear, so that when using this table it is essential to take out the tabular phenomenon for the latitude *less* than the true latitude.

TABLE II—FOR LONGITUDE

Long. East or West	Difference between the times for given date and preceding date (for east longitude) or for given date and following date (for west longitude)																			
	10 ^m 20 ^m 30 ^m	40 ^m 50 ^m 60 ^m	1 ^h + 10 ^m 20 ^m 30 ^m	1 ^h + 40 ^m 50 ^m 60 ^m	2 ^h 10 ^m	2 ^h 20 ^m	2 ^h 30 ^m	2 ^h 40 ^m	2 ^h 50 ^m	3 ^h 00 ^m										
°	m	m	m	m	m	m	m	m	m	m	m	m	h	m	h	m	h	m	h	m
0	0	0	0	0	0	0	0	0	0	0	0	0	0	00	0	00	0	00	0	00
10	0	1	1	1	1	2	2	2	3	3	3	04	04	04	04	05	05	05	05	05
20	1	1	2	2	3	3	4	4	5	6	6	7	07	08	08	09	09	10	10	10
30	1	2	2	3	4	5	6	7	7	8	9	10	11	12	12	13	14	15	15	15
40	1	2	3	4	6	7	8	9	10	11	12	13	14	16	17	18	19	20	20	20
50	1	3	4	6	7	8	10	11	12	14	15	17	0 18	0 19	0 21	0 22	0 24	0 25	0 25	0 25
60	2	3	5	7	8	10	12	13	15	17	18	20	22	23	25	27	28	30	30	30
70	2	4	6	8	10	12	14	16	17	19	21	23	25	27	29	31	33	35	35	35
80	2	4	7	9	11	13	16	18	20	22	24	27	29	31	33	36	38	40	40	40
90	2	5	7	10	12	15	17	20	22	25	27	30	32	35	37	40	42	45	45	45
100	3	6	8	11	14	17	19	22	25	28	31	33	0 36	0 39	0 42	0 44	0 47	0 50	0 50	0 50
110	3	6	9	12	15	18	21	24	27	31	34	37	40	43	46	49	0 52	0 55	0 55	0 55
120	3	7	10	13	17	20	23	27	30	33	37	40	43	47	50	53	0 57	1 00	1 00	1 00
130	4	7	11	14	18	22	25	29	32	36	40	43	47	51	54	0 58	1 01	1 05	1 05	1 05
140	4	8	12	16	19	23	27	31	35	39	43	47	51	54	0 58	1 02	1 06	1 10	1 10	1 10
150	4	8	13	17	21	25	29	33	38	42	46	50	0 54	0 58	1 03	1 07	1 11	1 15	1 15	1 15
160	4	9	13	18	22	27	31	36	40	44	49	53	0 58	1 02	1 07	1 11	1 16	1 20	1 20	1 20
170	5	9	14	19	24	28	33	38	42	47	52	57	1 01	1 06	1 11	1 16	1 20	1 25	1 25	1 25
180	5	10	15	20	25	30	35	40	45	50	55	60	1 05	1 10	1 15	1 20	1 25	1 30	1 30	1 30

Table II is for interpolating the L.M.T. of moonrise, moonset and the Moon's meridian passage for longitude. It is entered with longitude and with the difference between the times for the given date and for the preceding date (in east longitudes) or following date (in west longitudes). The correction is normally *added* for west longitudes and *subtracted* for east longitudes, but if, as occasionally happens, the times become earlier each day instead of later, the signs of the corrections must be reversed.

INDEX TO SELECTED STARS

Name	No.	Mag.	S.H.A.	Dec.
<i>Acamar</i>	7	3.1	316°	S. 40°
<i>Achernar</i>	5	0.6	336	S. 57
<i>Acrux</i>	30	1.1	174	S. 63
<i>Adhara</i>	19	1.6	256	S. 29
<i>Aldebaran</i>	10	1.1	292	N. 16
<i>Alioth</i>	32	1.7	167	N. 56
<i>Alkaid</i>	34	1.9	153	N. 50
<i>Al Na'ir</i>	55	2.2	29	S. 47
<i>Alnilam</i>	15	1.8	276	S. 1
<i>Alphard</i>	25	2.2	219	S. 8
<i>Alphecca</i>	41	2.3	127	N. 27
<i>Alpheratz</i>	1	2.2	358	N. 29
<i>Altair</i>	51	0.9	63	N. 9
<i>Ankaa</i>	2	2.4	354	S. 43
<i>Antares</i>	42	1.2	113	S. 26
<i>Arcturus</i>	37	0.2	147	N. 19
<i>Atria</i>	43	1.9	109	S. 69
<i>Avior</i>	22	1.7	235	S. 59
<i>Bellatrix</i>	13	1.7	279	N. 6
<i>Betelgeuse</i>	16	Var.*	272	N. 7
<i>Canopus</i>	17	-0.9	264	S. 53
<i>Capella</i>	12	0.2	282	N. 46
<i>Deneb</i>	53	1.3	50	N. 45
<i>Denebola</i>	28	2.2	183	N. 15
<i>Diphda</i>	4	2.2	350	S. 18
<i>Dubhe</i>	27	2.0	195	N. 62
<i>Elnath</i>	14	1.8	279	N. 29
<i>Eltanin</i>	47	2.4	91	N. 51
<i>Enif</i>	54	2.5	34	N. 10
<i>Fomalhaut</i>	56	1.3	16	S. 30
<i>Gacrux</i>	31	1.6	173	S. 57
<i>Gienah</i>	29	2.8	177	S. 17
<i>Hadar</i>	35	0.9	150	S. 60
<i>Hamal</i>	6	2.2	329	N. 23
<i>Kaus Australis</i>	48	2.0	85	S. 34
<i>Kochab</i>	40	2.2	137	N. 74
<i>Markab</i>	57	2.6	14	N. 15
<i>Menkar</i>	8	2.8	315	N. 4
<i>Menkent</i>	36	2.3	149	S. 36
<i>Miaplacidus</i>	24	1.8	222	S. 70
<i>Mirfak</i>	9	1.9	310	N. 50
<i>Nunki</i>	50	2.1	77	S. 26
<i>Peacock</i>	52	2.1	54	S. 57
<i>Pollux</i>	21	1.2	244	N. 28
<i>Procyon</i>	20	0.5	246	N. 5
<i>Rasalhague</i>	46	2.1	97	N. 13
<i>Regulus</i>	26	1.3	208	N. 12
<i>Rigel</i>	11	0.3	282	S. 8
<i>Rigil Kentaurus</i>	38	0.1	141	S. 61
<i>Sabik</i>	44	2.6	103	S. 16
<i>Schedar</i>	3	2.5	350	N. 56
<i>Shaula</i>	45	1.7	97	S. 37
<i>Sirius</i>	18	1.6	259	S. 17
<i>Spica</i>	33	1.2	159	S. 11
<i>Suhail</i>	23	2.2	223	S. 43
<i>Vega</i>	49	0.1	81	N. 39
<i>Zubenelgenubi</i>	39	2.9	138	S. 16

No.	Name	Mag.	S.H.A.	Dec.
1	<i>Alpheratz</i>	2.2	358°	N. 29°
2	<i>Ankaa</i>	2.4	354	S. 43
3	<i>Schedar</i>	2.5	350	N. 56
4	<i>Diphda</i>	2.2	350	S. 18
5	<i>Achernar</i>	0.6	336	S. 57
6	<i>Hamal</i>	2.2	329	N. 23
7	<i>Acamar</i>	3.1	316	S. 40
8	<i>Menkar</i>	2.8	315	N. 4
9	<i>Mirfak</i>	1.9	310	N. 50
10	<i>Aldebaran</i>	1.1	292	N. 16
11	<i>Rigel</i>	0.3	282	S. 8
12	<i>Capella</i>	0.2	282	N. 46
13	<i>Bellatrix</i>	1.7	279	N. 6
14	<i>Elnath</i>	1.8	279	N. 29
15	<i>Alnilam</i>	1.8	276	S. 1
16	<i>Betelgeuse</i>	Var.*	272	N. 7
17	<i>Canopus</i>	-0.9	264	S. 53
18	<i>Sirius</i>	-1.6	259	S. 17
19	<i>Adhara</i>	1.6	256	S. 29
20	<i>Procyon</i>	0.5	246	N. 5
21	<i>Pollux</i>	1.2	244	N. 28
22	<i>Avior</i>	1.7	235	S. 59
23	<i>Suhail</i>	2.2	223	S. 43
24	<i>Miaplacidus</i>	1.8	222	S. 70
25	<i>Alphard</i>	2.2	219	S. 8
26	<i>Regulus</i>	1.3	208	N. 12
27	<i>Dubhe</i>	2.0	195	N. 62
28	<i>Denebola</i>	2.2	183	N. 15
29	<i>Gienah</i>	2.8	177	S. 17
30	<i>Acrux</i>	1.1	174	S. 63
31	<i>Gacrux</i>	1.6	173	S. 57
32	<i>Alioth</i>	1.7	167	N. 56
33	<i>Spica</i>	1.2	159	S. 11
34	<i>Alkaid</i>	1.9	153	N. 50
35	<i>Hadar</i>	0.9	150	S. 60
36	<i>Menkent</i>	2.3	149	S. 36
37	<i>Arcturus</i>	0.2	147	N. 19
38	<i>Rigil Kentaurus</i>	0.1	141	S. 61
39	<i>Zubenelgenubi</i>	2.9	138	S. 16
40	<i>Kochab</i>	2.2	137	N. 74
41	<i>Alphecca</i>	2.3	127	N. 27
42	<i>Antares</i>	1.2	113	S. 26
43	<i>Atria</i>	1.9	109	S. 69
44	<i>Sabik</i>	2.6	103	S. 16
45	<i>Shaula</i>	1.7	97	S. 37
46	<i>Rasalhague</i>	2.1	97	N. 13
47	<i>Eltanin</i>	2.4	91	N. 51
48	<i>Kaus Australis</i>	2.0	85	S. 34
49	<i>Vega</i>	0.1	81	N. 39
50	<i>Nunki</i>	2.1	77	S. 26
51	<i>Altair</i>	0.9	63	N. 9
52	<i>Peacock</i>	2.1	54	S. 57
53	<i>Deneb</i>	1.3	50	N. 45
54	<i>Enif</i>	2.5	34	N. 10
55	<i>Al Na'ir</i>	2.2	29	S. 47
56	<i>Fomalhaut</i>	1.3	16	S. 30
57	<i>Markab</i>	2.6	14	N. 15

ALTITUDE CORRECTION TABLES 0°-35°-MOON

App. Alt.	0°-4°	5°-9°	10°-14°	15°-19°	20°-24°	25°-29°	30°-34°	App. Alt.
	Corr ^a	Corr ^a	Corr ^a	Corr ^a	Corr ^a	Corr ^a	Corr ^a	
00	0 33.8	5 58.2	10 62.1	15 62.8	20 62.2	25 60.8	30 58.9	00
10	35.9	58.5	62.2	62.8	62.1	60.8	58.8	10
20	37.8	58.7	62.2	62.8	62.1	60.7	58.8	20
30	39.6	58.9	62.3	62.8	62.1	60.7	58.7	30
40	41.2	59.1	62.3	62.8	62.0	60.6	58.6	40
50	42.6	59.3	62.4	62.7	62.0	60.6	58.5	50
00	1 44.0	6 59.5	11 62.4	16 62.7	21 62.0	26 60.5	31 58.5	00
10	45.2	59.7	62.4	62.7	61.9	60.4	58.4	10
20	46.3	59.9	62.5	62.7	61.9	60.4	58.3	20
30	47.3	60.0	62.5	62.7	61.9	60.3	58.2	30
40	48.3	60.2	62.5	62.7	61.8	60.3	58.2	40
50	49.2	60.3	62.6	62.7	61.8	60.2	58.1	50
00	2 50.0	7 60.5	12 62.6	17 62.7	22 61.7	27 60.1	32 58.0	00
10	50.8	60.6	62.6	62.6	61.7	60.1	57.9	10
20	51.4	60.7	62.6	62.6	61.6	60.0	57.8	20
30	52.1	60.9	62.7	62.6	61.6	59.9	57.8	30
40	52.7	61.0	62.7	62.6	61.5	59.9	57.7	40
50	53.3	61.1	62.7	62.6	61.5	59.8	57.6	50
00	3 53.8	8 61.2	13 62.7	18 62.5	23 61.5	28 59.7	33 57.5	00
10	54.3	61.3	62.7	62.5	61.4	59.7	57.4	10
20	54.8	61.4	62.7	62.5	61.4	59.6	57.4	20
30	55.2	61.5	62.8	62.5	61.3	59.6	57.3	30
40	55.6	61.6	62.8	62.4	61.3	59.5	57.2	40
50	56.0	61.6	62.8	62.4	61.2	59.4	57.1	50
00	4 56.4	9 61.7	14 62.8	19 62.4	24 61.2	29 59.3	34 57.0	00
10	56.7	61.8	62.8	62.3	61.1	59.3	56.9	10
20	57.1	61.9	62.8	62.3	61.1	59.2	56.9	20
30	57.4	61.9	62.8	62.3	61.0	59.1	56.8	30
40	57.7	62.0	62.8	62.2	60.9	59.1	56.7	40
50	57.9	62.1	62.8	62.2	60.9	59.0	56.6	50
H.P.	L U	L U	L U	L U	L U	L U	L U	H.P.
54.0	0.3 0.9	0.3 0.9	0.4 1.0	0.5 1.1	0.6 1.2	0.7 1.3	0.9 1.5	54.0
54.3	0.7 1.1	0.7 1.2	0.7 1.2	0.8 1.3	0.9 1.4	1.1 1.5	1.2 1.7	54.3
54.6	1.1 1.4	1.1 1.4	1.1 1.4	1.2 1.5	1.3 1.6	1.4 1.7	1.5 1.8	54.6
54.9	1.4 1.6	1.5 1.6	1.5 1.6	1.6 1.7	1.6 1.8	1.8 1.9	1.9 2.0	54.9
55.2	1.8 1.8	1.8 1.8	1.9 1.9	1.9 1.9	2.0 2.0	2.1 2.1	2.2 2.2	55.2
55.5	2.2 2.0	2.2 2.0	2.3 2.1	2.3 2.1	2.4 2.2	2.4 2.3	2.5 2.4	55.5
55.8	2.6 2.2	2.6 2.2	2.6 2.3	2.7 2.3	2.7 2.4	2.8 2.4	2.9 2.5	55.8
56.1	3.0 2.4	3.0 2.5	3.0 2.5	3.0 2.5	3.1 2.6	3.1 2.6	3.2 2.7	56.1
56.4	3.4 2.7	3.4 2.7	3.4 2.7	3.4 2.7	3.4 2.8	3.5 2.8	3.5 2.9	56.4
56.7	3.7 2.9	3.7 2.9	3.8 2.9	3.8 2.9	3.8 3.0	3.8 3.0	3.9 3.0	56.7
57.0	4.1 3.1	4.1 3.1	4.1 3.1	4.1 3.1	4.2 3.1	4.2 3.2	4.2 3.2	57.0
57.3	4.5 3.3	4.5 3.3	4.5 3.3	4.5 3.3	4.5 3.3	4.5 3.4	4.6 3.4	57.3
57.6	4.9 3.5	4.9 3.5	4.9 3.5	4.9 3.5	4.9 3.5	4.9 3.5	4.9 3.6	57.6
57.9	5.3 3.8	5.3 3.8	5.2 3.8	5.2 3.7	5.2 3.7	5.2 3.7	5.2 3.7	57.9
58.2	5.6 4.0	5.6 4.0	5.6 4.0	5.6 4.0	5.6 3.9	5.6 3.9	5.6 3.9	58.2
58.5	6.0 4.2	6.0 4.2	6.0 4.2	6.0 4.2	6.0 4.1	5.9 4.1	5.9 4.1	58.5
58.8	6.4 4.4	6.4 4.4	6.4 4.4	6.3 4.4	6.3 4.3	6.3 4.3	6.2 4.2	58.8
59.1	6.8 4.6	6.8 4.6	6.7 4.6	6.7 4.6	6.7 4.5	6.6 4.5	6.6 4.4	59.1
59.4	7.2 4.8	7.1 4.8	7.1 4.8	7.1 4.8	7.0 4.7	7.0 4.7	6.9 4.6	59.4
59.7	7.5 5.1	7.5 5.0	7.5 5.0	7.5 5.0	7.4 4.9	7.3 4.8	7.2 4.7	59.7
60.0	7.9 5.3	7.9 5.3	7.9 5.2	7.8 5.2	7.8 5.1	7.7 5.0	7.6 4.9	60.0
60.3	8.3 5.5	8.3 5.5	8.2 5.4	8.2 5.4	8.1 5.3	8.0 5.2	7.9 5.1	60.3
60.6	8.7 5.7	8.7 5.7	8.6 5.7	8.6 5.6	8.5 5.5	8.4 5.4	8.2 5.3	60.6
60.9	9.1 5.9	9.0 5.9	9.0 5.9	8.9 5.8	8.8 5.7	8.7 5.6	8.6 5.4	60.9
61.2	9.5 6.2	9.4 6.1	9.4 6.1	9.3 6.0	9.2 5.9	9.1 5.8	8.9 5.6	61.2
61.5	9.8 6.4	9.8 6.3	9.7 6.3	9.7 6.2	9.5 6.1	9.4 5.9	9.2 5.8	61.5

DIP								
Ht. of Eye		Corr ^a	Ht. of Eye		Corr ^a	Ht. of Eye		Corr ^a
ft.			ft.			ft.		
4.0	-2.0		24	-4.9		63	-7.8	
4.4	-2.1		26	-5.0		65	-7.9	
4.9	-2.2		27	-5.1		67	-8.0	
5.3	-2.3		28	-5.2		68	-8.1	
5.8	-2.4		29	-5.3		70	-8.2	
6.3	-2.5		30	-5.4		72	-8.3	
6.9	-2.6		31	-5.5		74	-8.4	
7.4	-2.7		32	-5.6		75	-8.5	
8.0	-2.8		33	-5.7		77	-8.6	
8.6	-2.9		35	-5.8		79	-8.7	
9.2	-3.0		36	-5.9		81	-8.8	
9.8	-3.1		37	-6.0		83	-8.9	
10.5	-3.2		38	-6.1		85	-9.0	
11.2	-3.3		40	-6.2		87	-9.1	
11.9	-3.4		41	-6.3		88	-9.2	
12.6	-3.5		42	-6.4		90	-9.3	
13.3	-3.6		44	-6.5		92	-9.4	
14.1	-3.7		45	-6.6		94	-9.5	
14.9	-3.8		47	-6.7		96	-9.6	
15.7	-3.9		48	-6.8		98	-9.7	
16.5	-4.0		49	-6.9		101	-9.8	
17.4	-4.1		51	-7.0		103	-9.9	
18.3	-4.2		52	-7.1		105	-10.0	
19.1	-4.3		54	-7.2		107	-10.1	
20.1	-4.4		55	-7.3		109	-10.2	
21.0	-4.5		57	-7.4		111	-10.3	
22.0	-4.6		58	-7.5		113	-10.4	
22.9	-4.7		60	-7.6		116	-10.5	
23.9	-4.8		62	-7.7		118	-10.6	
24.9			63			120		

MOON CORRECTION TABLE

The correction is in two parts; the first correction is taken from the upper part of the table with argument apparent altitude, and the second from the lower part, with argument H.P., in the same column as that from which the first correction was taken. Separate corrections are given in the lower part for lower (L) and upper (U) limbs. All corrections are to be **added** to apparent altitude, but 30' is to be **subtracted** from the altitude of the upper limb.

For corrections for pressure and temperature see page A4.

For bubble sextant observations ignore dip, take the mean of upper and lower limb corrections and subtract 15' from the altitude.

App. Alt. = Apparent altitude
= Sextant altitude corrected for index error and dip.

ALTITUDE CORRECTION TABLES 35°-90°—MOON

App. Alt.	35°-39°	40°-44°	45°-49°	50°-54°	55°-59°	60°-64°	65°-69°	70°-74°	75°-79°	80°-84°	85°-89°	App. Alt.
	Corr ^a	Corr ^a	Corr ^a	Corr ^a	Corr ^a	Corr ^a	Corr ^a	Corr ^a	Corr ^a	Corr ^a	Corr ^a	
00	35 56.5	40 53.7	45 50.5	50 46.9	55 43.1	60 38.9	65 34.6	70 30.1	75 25.3	80 20.5	85 15.6	00
10	56.4	53.6	50.4	46.8	42.9	38.8	34.4	29.9	25.2	20.4	15.5	10
20	56.3	53.5	50.2	46.7	42.8	38.7	34.3	29.7	25.0	20.2	15.3	20
30	56.2	53.4	50.1	46.5	42.7	38.5	34.1	29.6	24.9	20.0	15.1	30
40	56.2	53.3	50.0	46.4	42.5	38.4	34.0	29.4	24.7	19.9	15.0	40
50	56.1	53.2	49.9	46.3	42.4	38.2	33.8	29.3	24.5	19.7	14.8	50
00	36 56.0	41 53.1	46 49.8	51 46.2	56 42.3	61 38.1	66 33.7	71 29.1	76 24.4	81 19.6	86 14.6	00
10	55.9	53.0	49.7	46.0	42.1	37.9	33.5	29.0	24.2	19.4	14.5	10
20	55.8	52.8	49.5	45.9	42.0	37.8	33.4	28.8	24.1	19.2	14.3	20
30	55.7	52.7	49.4	45.8	41.8	37.7	33.2	28.7	23.9	19.1	14.1	30
40	55.6	52.6	49.3	45.7	41.7	37.5	33.1	28.5	23.8	18.9	14.0	40
50	55.5	52.5	49.2	45.5	41.6	37.4	32.9	28.3	23.6	18.7	13.8	50
00	37 55.4	42 52.4	47 49.1	52 45.4	57 41.4	62 37.2	67 32.8	72 28.2	77 23.4	82 18.6	87 13.7	00
10	55.3	52.3	49.0	45.3	41.3	37.1	32.6	28.0	23.3	18.4	13.5	10
20	55.2	52.2	48.8	45.2	41.2	36.9	32.5	27.9	23.1	18.2	13.3	20
30	55.1	52.1	48.7	45.0	41.0	36.8	32.3	27.7	22.9	18.1	13.2	30
40	55.0	52.0	48.6	44.9	40.9	36.6	32.2	27.6	22.8	17.9	13.0	40
50	55.0	51.9	48.5	44.8	40.8	36.5	32.0	27.4	22.6	17.8	12.8	50
00	38 54.9	43 51.8	48 48.4	53 44.6	58 40.6	63 36.4	68 31.9	73 27.2	78 22.5	83 17.6	88 12.7	00
10	54.8	51.7	48.2	44.5	40.5	36.2	31.7	27.1	22.3	17.4	12.5	10
20	54.7	51.6	48.1	44.4	40.3	36.1	31.6	26.9	22.1	17.3	12.3	20
30	54.6	51.5	48.0	44.2	40.2	35.9	31.4	26.8	22.0	17.1	12.2	30
40	54.5	51.4	47.9	44.1	40.1	35.8	31.3	26.6	21.8	16.9	12.0	40
50	54.4	51.2	47.8	44.0	39.9	35.6	31.1	26.5	21.7	16.8	11.8	50
00	39 54.3	44 51.1	49 47.6	54 43.9	59 39.8	64 35.5	69 31.0	74 26.3	79 21.5	84 16.6	89 11.7	00
10	54.2	51.0	47.5	43.7	39.6	35.3	30.8	26.1	21.3	16.5	11.5	10
20	54.1	50.9	47.4	43.6	39.5	35.2	30.7	26.0	21.2	16.3	11.4	20
30	54.0	50.8	47.3	43.5	39.4	35.0	30.5	25.8	21.0	16.1	11.2	30
40	53.9	50.7	47.2	43.3	39.2	34.9	30.4	25.7	20.9	16.0	11.0	40
50	53.8	50.6	47.0	43.2	39.1	34.7	30.2	25.5	20.7	15.8	10.9	50
H.P.	L U	L U	L U	L U	L U	L U	L U	L U	L U	L U	L U	H.P.
54.0	1.1 1.7	1.3 1.9	1.5 2.1	1.7 2.4	2.0 2.6	2.3 2.9	2.6 3.2	2.9 3.5	3.2 3.8	3.5 4.1	3.8 4.5	54.0
54.3	1.4 1.8	1.6 2.0	1.8 2.2	2.0 2.5	2.3 2.7	2.5 3.0	2.8 3.2	3.0 3.5	3.3 3.8	3.6 4.1	3.9 4.4	54.3
54.6	1.7 2.0	1.9 2.2	2.1 2.4	2.3 2.6	2.5 2.8	2.7 3.0	3.0 3.3	3.2 3.5	3.5 3.8	3.7 4.1	4.0 4.3	54.6
54.9	2.0 2.2	2.2 2.3	2.3 2.5	2.5 2.7	2.7 2.9	2.9 3.1	3.2 3.3	3.4 3.5	3.6 3.8	3.9 4.0	4.1 4.3	54.9
55.2	2.3 2.3	2.5 2.4	2.6 2.6	2.8 2.8	3.0 2.9	3.2 3.1	3.4 3.3	3.6 3.5	3.8 3.7	4.0 4.0	4.2 4.2	55.2
55.5	2.7 2.5	2.8 2.6	2.9 2.7	3.1 2.9	3.2 3.0	3.4 3.2	3.6 3.4	3.7 3.5	3.9 3.7	4.1 3.9	4.3 4.1	55.5
55.8	3.0 2.6	3.1 2.7	3.2 2.8	3.3 3.0	3.5 3.1	3.6 3.3	3.8 3.4	3.9 3.6	4.1 3.7	4.2 3.9	4.4 4.0	55.8
56.1	3.3 2.8	3.4 2.9	3.5 3.0	3.6 3.1	3.7 3.2	3.8 3.3	4.0 3.4	4.1 3.6	4.2 3.7	4.4 3.8	4.5 4.0	56.1
56.4	3.6 2.9	3.7 3.0	3.8 3.1	3.9 3.2	3.9 3.3	4.0 3.4	4.1 3.5	4.3 3.6	4.4 3.7	4.5 3.8	4.6 3.9	56.4
56.7	3.9 3.1	4.0 3.1	4.1 3.2	4.1 3.3	4.2 3.3	4.3 3.4	4.3 3.5	4.4 3.6	4.5 3.7	4.6 3.8	4.7 3.8	56.7
57.0	4.3 3.2	4.3 3.3	4.3 3.3	4.4 3.4	4.4 3.4	4.5 3.5	4.5 3.5	4.6 3.6	4.7 3.6	4.7 3.7	4.8 3.8	57.0
57.3	4.6 3.4	4.6 3.4	4.6 3.4	4.6 3.5	4.7 3.5	4.7 3.5	4.7 3.6	4.8 3.6	4.8 3.6	4.8 3.7	4.9 3.7	57.3
57.6	4.9 3.6	4.9 3.6	4.9 3.6	4.9 3.6	4.9 3.6	4.9 3.6	4.9 3.6	4.9 3.6	5.0 3.6	5.0 3.6	5.0 3.6	57.6
57.9	5.2 3.7	5.2 3.7	5.2 3.7	5.2 3.7	5.2 3.7	5.1 3.6	5.1 3.6	5.1 3.6	5.1 3.6	5.1 3.6	5.1 3.6	57.9
58.2	5.5 3.9	5.5 3.8	5.5 3.8	5.4 3.8	5.4 3.7	5.4 3.7	5.3 3.7	5.3 3.6	5.2 3.6	5.2 3.5	5.2 3.5	58.2
58.5	5.9 4.0	5.8 4.0	5.8 3.9	5.7 3.9	5.6 3.8	5.6 3.8	5.5 3.7	5.5 3.6	5.4 3.6	5.3 3.5	5.3 3.4	58.5
58.8	6.2 4.2	6.1 4.1	6.0 4.1	6.0 4.0	5.9 3.9	5.8 3.8	5.7 3.7	5.6 3.6	5.5 3.5	5.4 3.5	5.3 3.4	58.8
59.1	6.5 4.3	6.4 4.3	6.3 4.2	6.2 4.1	6.1 4.0	6.0 3.9	5.9 3.8	5.8 3.6	5.7 3.5	5.6 3.4	5.4 3.3	59.1
59.4	6.8 4.5	6.7 4.4	6.6 4.3	6.5 4.2	6.4 4.1	6.2 3.9	6.1 3.8	6.0 3.7	5.8 3.5	5.7 3.4	5.5 3.2	59.4
59.7	7.1 4.6	7.0 4.5	6.9 4.4	6.8 4.3	6.6 4.1	6.5 4.0	6.3 3.8	6.2 3.7	6.0 3.5	5.8 3.3	5.6 3.2	59.7
60.0	7.5 4.8	7.3 4.7	7.2 4.5	7.0 4.4	6.9 4.2	6.7 4.0	6.5 3.9	6.3 3.7	6.1 3.5	5.9 3.3	5.7 3.1	60.0
60.3	7.8 5.0	7.6 4.8	7.5 4.7	7.3 4.5	7.1 4.3	6.9 4.1	6.7 3.9	6.5 3.7	6.3 3.5	6.0 3.2	5.8 3.0	60.3
60.6	8.1 5.1	7.9 5.0	7.7 4.8	7.6 4.6	7.3 4.4	7.1 4.2	6.9 3.9	6.7 3.7	6.4 3.4	6.2 3.2	5.9 2.9	60.6
60.9	8.4 5.3	8.2 5.1	8.0 4.9	7.8 4.7	7.6 4.5	7.3 4.2	7.1 4.0	6.8 3.7	6.6 3.4	6.3 3.2	6.0 2.9	60.9
61.2	8.7 5.4	8.5 5.2	8.3 5.0	8.1 4.8	7.8 4.5	7.6 4.3	7.3 4.0	7.0 3.7	6.7 3.4	6.4 3.1	6.1 2.8	61.2
61.5	9.1 5.6	8.8 5.4	8.6 5.1	8.3 4.9	8.1 4.6	7.8 4.3	7.5 4.0	7.2 3.7	6.9 3.4	6.5 3.1	6.2 2.7	61.5

